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A METHOD OF TEACHING RELATIONAL ANATOMY.*

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For many centuries the science of anatomy has been universally recognized as the foundation for the study of medicine. It is, therefore, evident that the best method of studying and teaching this fundamental subject is a problem of great importance. To anatomy belongs the credit of being the first science to adopt the objective, or laboratory method of study. Anatomists long ago insisted that the only way to gain real knowledge of anatomy is by dissection. The art of dissection has therefore been diligently cultivated for many centuries, and the practical limit of its development was reached nearly one hundred years ago. Indeed, the anatomists of the present day are perhaps inferior in the art of dissection to those of the previous generation. This is undoubtedly due to the increased attention paid in recent years to the related subjects of comparative anatomy and embryology, and to the new world of facts revealed in microscopic anatomy or histology. The effect of these studies has been to revolutionize the science of anatomy, so that its present scope and significance are perhaps better expressed by the more comprehensive term, morphology.

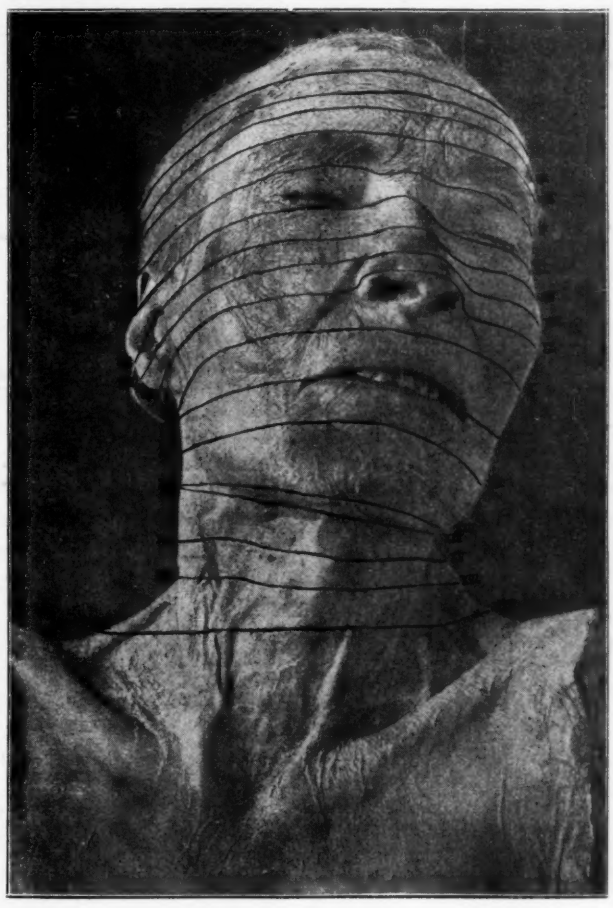

Fig. 1.—From photograph of head and neck, anterior view. Lines I to XVII indicate where the sections were made. Female subject, age about 60 years. Landmarks are clearly shown.

Yet, with all the time spent in dissection, and in spite of the flood of light thrown upon the subject by recent advances in comparative and microscopic studies, we still fail to accomplish the desired end. The ambition of the student of anatomy is, or should be, the ability to *see through* the body, perceiving in the mind's eye all the structures included therein, and their complicated relations to each other. This ability the student must gain somehow, if he is to achieve real success in medicine or surgery; for upon this knowledge are based both physical diagnosis and surgical procedure.

Bearing this in mind, and also the fact that the average medical graduate is very deficient in his knowledge of anatomy from this standpoint, it must be admitted that there is something wrong with our present and past methods of teaching the subject. Wherein do we fail? The reason, it seems to me, lies in the fact that in all the time we devote to the study of the various branches of anatomy—comparative anatomy, osteology, dissection, descriptive anatomy, histology, embryology, etc.—in all these branches we spend practically our entire time upon the study of the individual organs and organ-systems, while practically no time is spent in considering the anatomical relations of these organs to each other, and to the surface of the body. To me it seems clear that so long as this is true, the student's knowledge of anatomy, at least from the standpoint of medicine, must necessarily remain incomplete and unsatisfactory.

This being true, the question arises: What method can we use to study what we may term the relational anatomy of the various organs? Take the liver, for example. How shall we proceed to study the exact spatial relations of the liver to the neighboring structures, such as the stomach, kidneys or lungs; and how shall we determine its relations to the surface of the body? It is evident that the ordinary methods of dissection give us very imperfect knowledge in this regard, for in the very act of dissection we must necessarily remove those surrounding structures whose relations it is so important to determine. There is, I believe,

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only one way in which relational anatomy can be thoroughly, systematically and satisfactorily studied; and that is by means of sections made in various planes in the different regions of the body. Only by this method are the organs made visible in their actual spatial relations to each other. This is by no means a new method of investigation. It has long been used in histology and embryology, where objects are too small or too delicate to be studied otherwise. It has also been applied, to a very limited extent, to the gross anatomy in a few special regions of the human body.[1] But on account of certain difficulties in the application of the method, it has never come into general use. The method which I have to present, therefore, while old in principle, is new in its application; since, so far as I am aware, in no other laboratory of anatomy is it made a regular part of the system of instruction.

Fig. 2.—Lateral view of the head and neck, photographed from the same subject as Fig. 1.

The plan which I have worked out for instruction in relational anatomy involves the following consecutive steps: 1. Hardening of cadavers. 2. Study of surface form. 3. Making of sections. 4. Study and drawings of sections. 5. Reference to literature. 6. Written report of results.

Hardening of Cadavers.—Suitable cadavers, selected especially for this work, are injected, not with the usual embalming liquids, but with 50 per cent. formalin, that is, pure formalin (40 per cent. formaldehyde) diluted with equal volume of water. I inject about one gallon, or more if possible, of this liquid into the arteries, usually through the common femoral. This may be followed in a few hours by a second colored injection mass, if desired. Within a few days all the softer tissues of the body become thoroughly hardened. Every organ is thus fixed perfectly in the exact shape and position it occupied during life. Sections may be made at any time after one week. If the cadaver is to be kept some time before using, all that is necessary is to apply vaselin to the skin and wrap with oil muslin bandages to prevent drying. The cadaver will then preserve perfectly, at any temperature, for an indefinite time.

Study of Surface Form.—For the work in relational anatomy, the class—which has previously completed its dissections by the ordinary method—is divided into groups of two, who work together. Two are assigned to the head and neck, two to the thorax, two to the abdomen, and two to each arm and leg. The first thing that each student does is to make a very thorough study of the surface form of the region to which he is assigned. Special stress is laid upon the landmarks, whose relations to the underlying structures are of great importance. The student makes careful measurements, and records his observations in a note-book kept for the purpose. A mounted skeleton, an Auzoux manikin, and various other models are at hand for comparison.

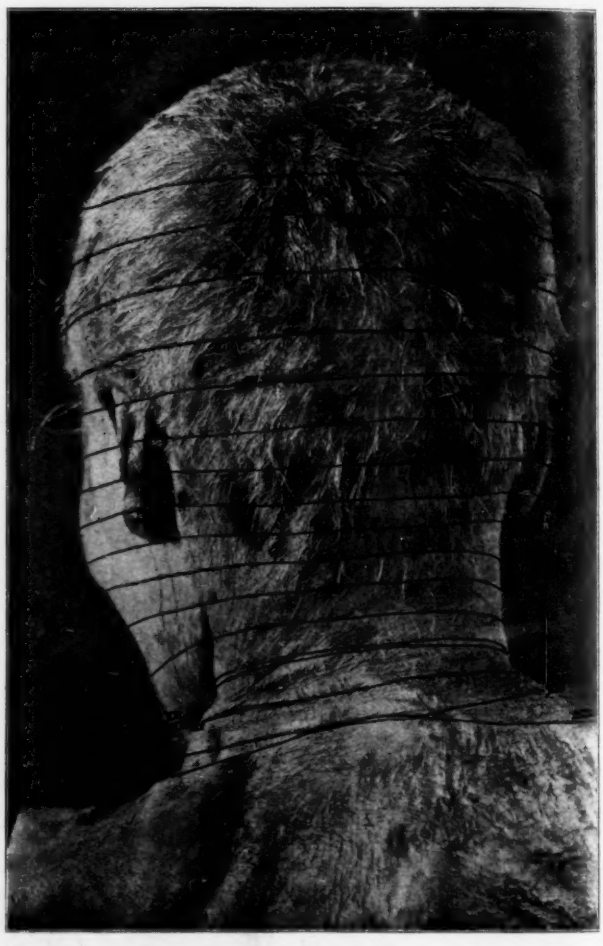

Fig. 3.—Posterior view of the head and neck. Photograph from same subject shown in Figs. 1 and 2.

At this point, photographs are taken showing different views of each region. A set of these photographs is supplied to each student, and they serve a double

1. Braune, Macewen, Dwight, and others, have made sections for the investigation of relational anatomy, chiefly by the freezing method.

purpose. In the first place, they furnish an exact picture record of the surface form; and secondly, by means of reference lines drawn later in ink, they serve to indicate the exact level and plane of each section taken. This is a very important feature. In case the photographs were not obtainable, it would be necessary to make very careful outline drawings, upon which the landmarks and reference lines would be shown.

Making of Sections.—Having carefully studied the surface form, and having a record of his observations in notes and photographs, the student now proceeds to cut sections through the body in the desired planes. As soon as made, the sections should be thoroughly washed with water, taking care not to displace any organs. Blood-clots, fecal material, excess of formalin, etc., are thus removed. Cross sections of the extremities are best made at definite intervals, every half inch or inch. In the head, the sections need not be more than one-fourth inch apart. In the trunk, sections should be somewhat thicker. I have found that it facilitates the handling of sections, and especially the problem of determining the exact level of a given structure, if the sections in the trunk region be made to pass through the intervertebral disks. Then each slice corresponds to the body of a vertebra. It is remarkable how well sections made by this method will hold together, even when they pass through the intestines. Occasionally a piece becomes loose or detached, but it is easily secured in place by a stitch of thread. In the head and trunk, and a few special regions, besides cross sections, coronal and sagittal sections are also necessary. Wherever possible, consecutive sections are left attached to each other at one edge by the skin. The sections are made with a long butcher knife and an ordinary butcher's saw (for bones). If the tissues are thoroughly hardened, the sections are easily and smoothly made.

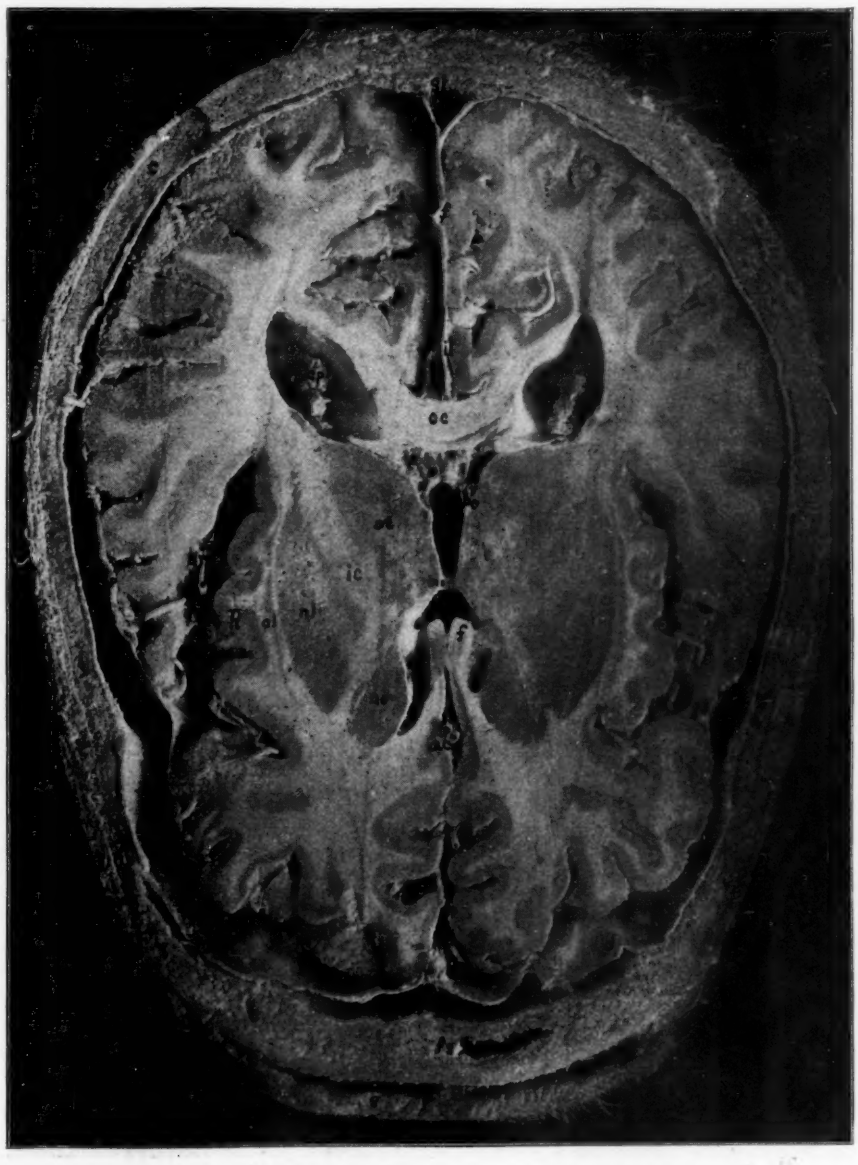

Fig. 4.—From photograph showing horizontal section through the head, viewed from above, at the level indicated by reference line III, in Figs. 1, 2 and 3. Section passes through the frontal, temporal, and occipital lobes, and the Island of Reil. *s*, Scalp; *c*, cranium; *d*, dura mater; *p*, pia mater; *fs*, frontal sinus; *f*, falx cerebri; *sl*, sup. longitudinal sinus; *il*, inferior longitudinal sinus; *ac*, anterior cerebral arteries; *br*, branches of middle cerebral arteries; *r*, Island of Reil; *f*, fornix; *cc*, corpus callosum; *cp*, chorold plexus in lateral ventricle; *mc*, middle commissure (in 3d ventricle); *pc*, posterior commissure; *ot*, optic thalamus; *ic*, internal capsule; *nc*, nucleus caudatus; *nl*, nucleus lenticularis; *cl*, claustrum.

In this connection, I may remark that this formalin method offers several advantages over the method of frozen sections. No freezing is necessary; the sections are made more easily and smoothly; and, finally, they do not thaw out and become loose or flabby upon handling. This method is also superior to all embedding methods, since not only the surfaces of the sections, but also the structures between, are accessible for examination. In fact, it combines the advantages of dissection with those of plane sections.

In some cases it is advantageous to *combine* the formalin and freezing methods by first hardening the cadaver thoroughly with formalin, as above outlined, and then making the sections by the freezing method.

Dr. Terry[2] has suggested that the bones be decalcified with acids, thus avoiding the use of a saw. This is perhaps admissible in the head region, where dense skeletal parts are so closely related to delicate organs; but elsewhere, I consider it desirable for the student actually to saw through the bones upon reaching them. The location and physical characters of the skeleton are thereby more firmly impressed upon his mind. Even through the head region, as the accompanying figures show, excellent sections can be made without decalcification, which is therefore necessary only when very thin sections are desired.

Study and Drawing of Sections.—After the sections are cut, the student begins the most important part of

2. Proceedings of the Association American Anatomists, Washington, D. C., 1900.

his work, viz., the study of the sections. Every structure which appears in each section must be identified, every nerve and blood-vessel followed. The position of the various organs with respect to each other, and to the surface, must be carefully observed and recorded in a note-book. The sections are studied first separately, and later collectively, by placing them together in their natural order. Finally, in order to impress the relations more strongly upon the student, he is required to make a careful outline drawing of each section. We have adopted for this work a method of drawing which makes it easy and at the same time very accurate. A piece of plate glass in an open frame is laid directly upon the section which is to be drawn. Then, by means of pen and India ink, the outlines are traced, showing all the organs visible through the glass, in their exact relations. When the ink is dry, a sheet of drawing paper or bristol board of the proper size, is placed in the frame and fastened by an inner frame behind the glass which contains the ink outline (See Fig. 8). Upon holding up the frame toward the light, the ink outline shows through distinctly, and can readily be traced with a pencil upon the drawing paper. At night the drawings are readily transferred by placing the frame over an electric light. The principle of tracing upon glass was suggested by one of my students, the drawing frame being an invention of my own. The most difficult and important part of the drawing, an accurate outline of the various structures, is now upon the drawing paper. The pencil outline is retraced with ink, and the details are readily filled in with ink, water colors, etc., according to the taste of the individual student. These drawings are very highly prized by the students, and, indeed, form a valuable set of plates for future reference.

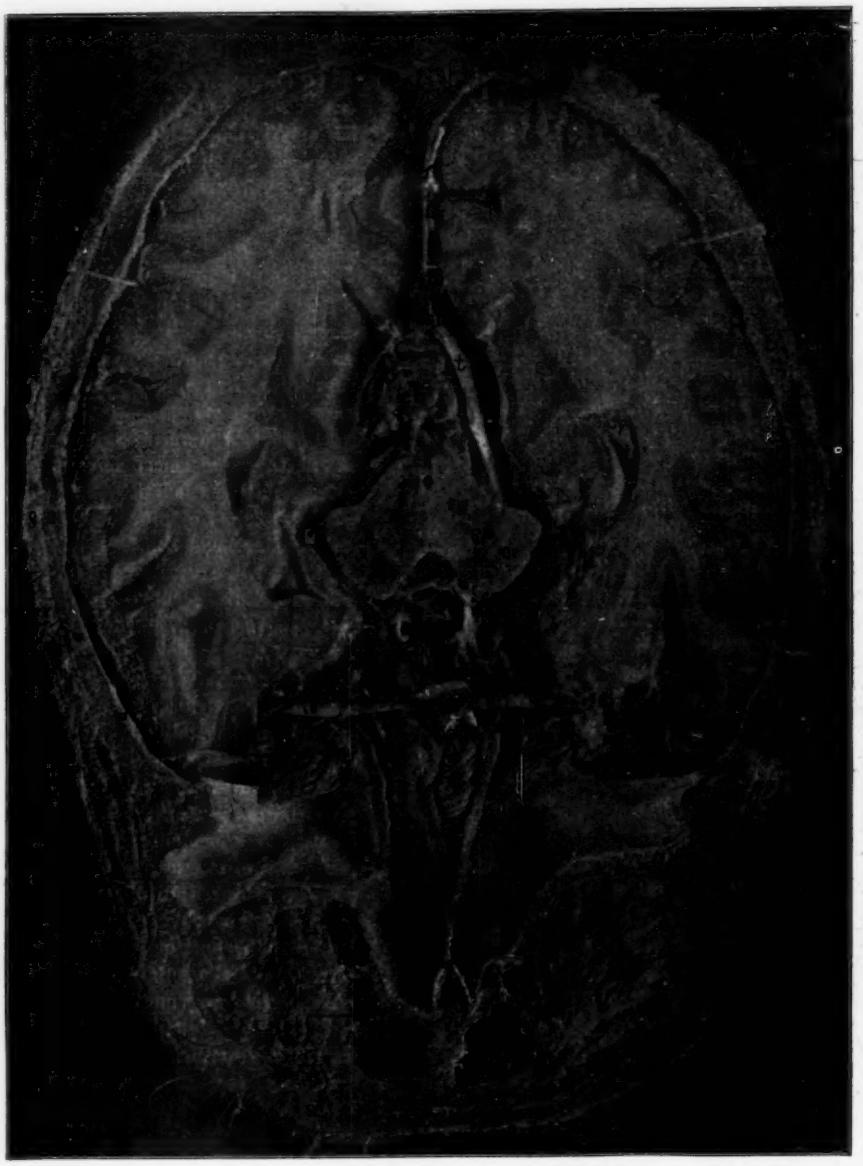

Fig. 5.—From photograph showing horizontal section, viewed from above, through the head at the level indicated by line IV in Figs. 1, 2 and 3. This section passes through the temporal and occipital lobes, and the upper part of the orbital cavity. *s*, Scalp; *c*, cranium; *tm*, temporal muscle; *d*, dura mater; *f*, falx; *t*, tentorium; *sl*, sup. long. sinus; *il*, inf. long. sinus; *of*, orbital fat; *e*, ethmoidal cells; *fs*, frontal sinus; *cg*, crista galli; *ob*, olfactory bulb; *af*, anterior fossa; *ic*, internal carotid; *cp*, choroid plexus of lateral ventricle; *cq*, corpora quadrigemina; *aq*, Sylvian aqueduct; *sn*, substantia nigra; *cr*, crusta; *tg*, tegmentum; *cb*, cerebellum.

Every structure appearing upon these drawings is, of course, carefully labeled, and the reference line on the photograph showing the plane of the section is also indicated by numbers.[3] For the sake of uniformity, every drawing should represent the *upper surface* of the section, unless there is a special reason for the contrary. Moreover—and this is a point upon which I insist strongly—every section should be studied and drawn in the position it would occupy if the cadaver were facing the student, that is, with the *ventral* body wall *nearest*, and the dorsal wall on the further side of the drawing. Some uniform method of position is necessary, both in studying and in drawing, otherwise no clear and permanent mental images can be formed. How could one form any idea of geographical location from maps, if the top of the map sometimes indicated north, sometimes south, sometimes east, and sometimes west? The reason for placing the dorsal side of an anatomical figure toward the top of the page is because that represents (when the drawing is held upright) the typical vertebrate position: dorsal surface upward and ventral surface downward. Since a thorough study of human anatomy, is impossible without reference to comparative anatomy, the same standard of position should be adopted for both.

Reference to Literature.—The student has now studied and compared his sections, and finished his drawings of them, but still his task is not completed. He has yet to compare his own work with the results of other

3. A blue print copy of every drawing, and a duplicate of each photograph, are preserved by the laboratory as a record for reference in the future.

investigators. To do this he is required to look up references concerning the relational anatomy of the region in the various books and periodicals in the department library. He takes notes here also, and finds, often to his astonishment, that the authors sometimes disagree with each other, and also with the facts as he *knows* them to be in his own sections. Thus he learns the important lesson that the real source of knowledge is Nature, not books.

Written Report of Results.—Finally, in order to get his knowledge arranged in a systematic way, the student is required to write a report in which he sums up briefly and clearly, the results of his own observations, and compares them with the statements found in the literature. The writing of this paper, which is, of course, accompanied by the explanatory photographs and drawings, forms an excellent review of the entire subject, and puts the work of the student in a convenient form for future reference.

Besides the thorough study of one region, according to the method outlined, the student is required to review the remainder of the body from sections already made. Thus he becomes familiar with the more important topographic relations of the entire body. More advanced work in topographical anatomy is assigned to students who wish to make a special study of the subject.

In conclusion, allow me to suggest that this method for the study of relational anatomy will be of the utmost value to practitioners who are not located conveniently near anatomical laboratories, but still desire to devote some time to the study of anatomy, especially in its relations to surgery. The method is simple, the apparatus inexpensive, the material keeps indefinitely, and the knowledge gained from a study of the body in this way can hardly fail to be of great practical value. Drying of the sections is the only trouble to be guarded against. This may be prevented, 1, by placing a cloth wet with some slightly antiseptic liquid between every two sections, when not in use; 2, by wrapping the entire part in water-proof cloths; 3, by keeping the sections in an air-tight receptacle, either box, can or jar. Formalin sections dry much less rapidly than alcoholic specimens, however, and can be exposed to the air for two or three hours without damage.

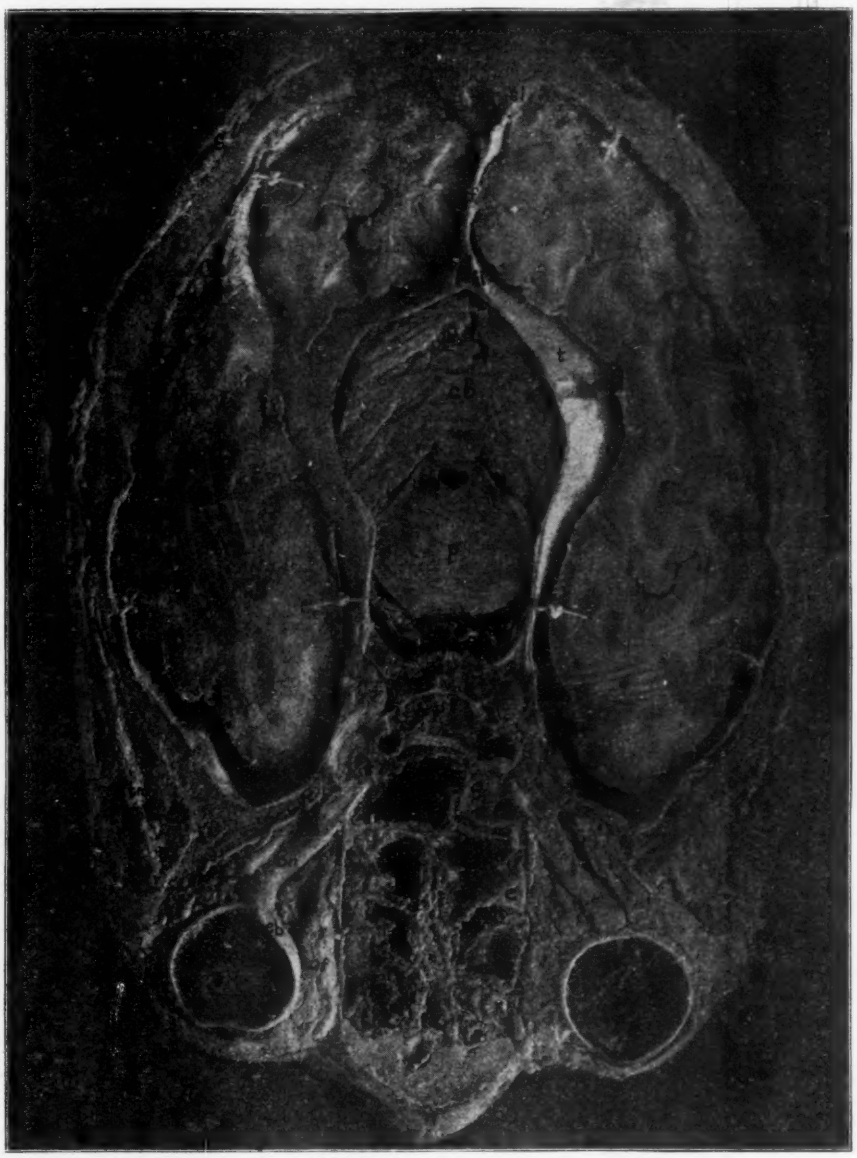

Fig. 6.—From photograph showing horizontal section, viewed from above, of the head at level indicated by line V in Figs. 1, 2 and 3. Section passes through temporal and occipital lobes, and just above the center of the eyeball. *s*, Scalp; *tm*, temporal muscle; *c*, cranium; *n*, nose; *f*, falx; *sl*, sup. long. sinus; *il*, inf. long. sinus; *t*, tentorium; *eb*, eyeball (retina shrunken); *of*, orbital fat; *on*, optic nerve; *e*, ethmoidal cells; *s*, sphenoidal cell; *ic*, internal carotid; *pt*, pituitary body; *b*, basilar artery; *p*, pons varolii; *aq*, aqueduct of Sylvius; *cb*, cerebellum. (Figs. 7 and 8 in following article.)

Rovsing's Ablation of the Stomach. — In Rovsing's patient the discovery of the carcinomatous condition of the stomach was a laparotomy surprise. He found it necessary to remove the entire stomach with a portion of the esophagus. The stump of the latter slipped up through the diaphragm and union with the duodenum proving impracticable, he sutured it to a loop of the jejunum, 40 cm. from the duodeno-jejunal angle, inserting the esophagus in a longitudinal incision 12 cm. in length. The patient showed signs of collapse at first, and slight phlebitis was observed during convalescence. Recovery was uneventful.

An Italian Professor Exonerated.—Professor D'Antona, of Naples, was recently accused by the relatives of having caused the death of a patient by overlooking a gauze compress in an operation on the liver. A committee of investigation was appointed by the Senate, who have honorably exonerated the surgeon from the slightest blame. The patient had malignant disease of the liver, and in operating, a gauze drain was purposely left. The patient left the hospital contrary to his wishes, and her death soon after was attributed to the gauze.

THE AIM OF MEDICAL EDUCATION, AND ITS RELATION TO RESEARCH WORK, BY MEDICAL STUDENTS.

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The work of the medical colleges twenty years ago was such that almost any change in it was a change in the direction of improvement. The result was that as changes were suggested, they were hailed with delight, and adopted as rapidly and as thoroughly as the different schools could accommodate themselves to them, until it has now almost become a habit to accept as good and desirable any innovation in medical college work which may be suggested. The last two decades have seen a general extension of the time of medical study from two courses of five months each to four courses of eight or nine months each; this period has seen introduced into the curriculum many branches of study, previously never attempted; it has seen the standard of admission raised, and the requirements for the degree, and for the right to practice made more stringent. During the same time the subject of laboratory work has practically had its whole development in our American schools, excepting only certain work in dissection, and some very rudimentary chemical work. The didactic lectures of the older days have been severely criticised, and the recitation method has found many advocates, and some application. So numerous and far reaching have these changes been in so short a time, that we must admit that we are in the midst of "boom times" in medical education. And "boom times" are not without their dangers; their products are not always solid. A mere glance at the changes show that they involve standards of admission to professional study, subject matter of such study, methods of teaching, and the relations of the profession to the community. Each of these factors is complex; it has many sides and many relations, pedagogical, professional, and social, not all of which are apparent at a glance, and some of which can only be determined as time and experience reveal them. It would seem, therefore, wise to stop occasionally and review the situation broadly and compare our position with fundamental landmarks, to take our bearings, and determine if possible if our progress is all that we fondly think it to be.

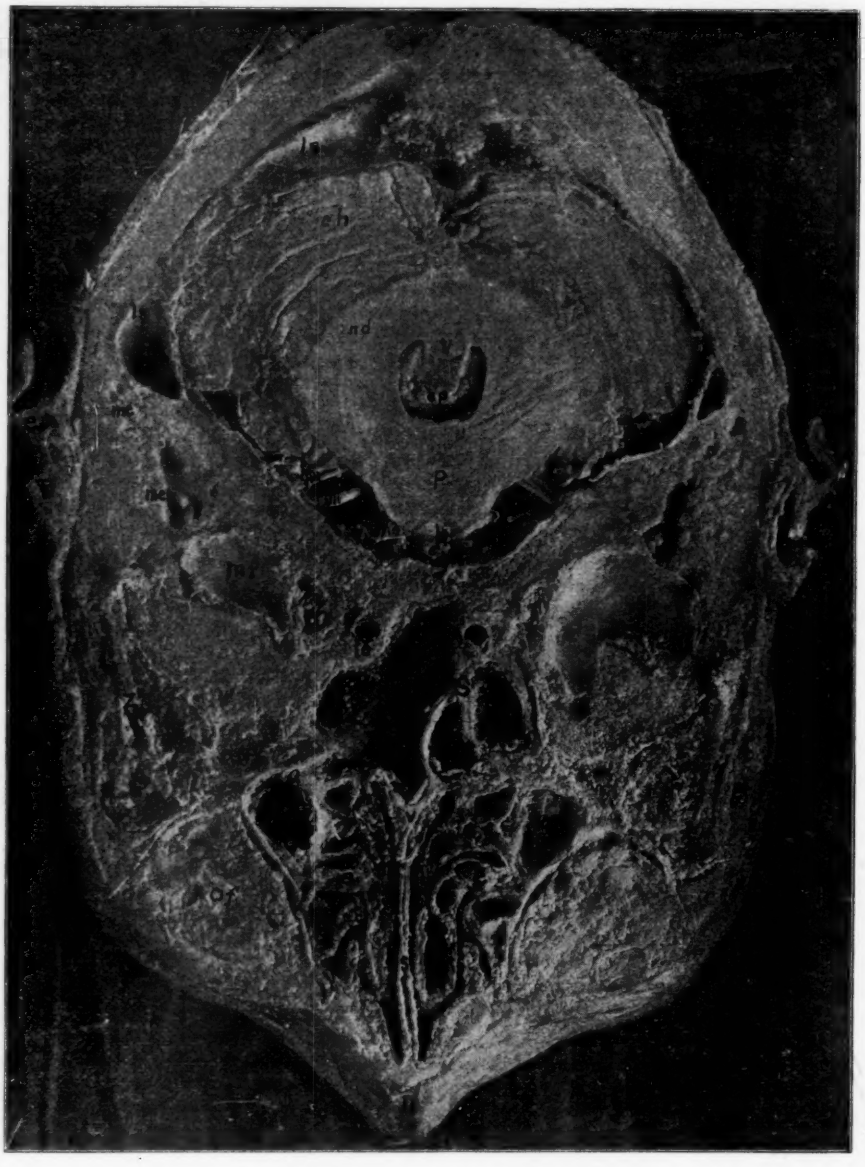

Fig. 7.—From photograph of horizontal section, viewed from above, of the head at the level of line VI, in Figs. 1, 2 and 3. This section passes below the cerebrum, striking the cerebellum middle ear and lower part of the orbit. *ea*, External ear; *z*, zygomatic arch; *n*, nose; *of*, orbital fat; *s*, nasal septum; *v*, vomer; *e*, ethmoidal cells; *a*, antrum of Highmore; *s*, sphenoidal cells; *ic*, internal carotid; *b*, basilar artery; *g*, Gasserian ganglion; *mf*, middle fossa; *mc*, middle ear, showing chain of bones; *mc*, mastoid cells; *ls*, lateral sinus; *ch*, cerebellar hemisphere; *nd*, nucleus dentatus; *v*, vermis; *cp*, choroid plexus of the 4th ventricle; *p*, pons varolii; *VII*, 7th cranial nerve; *VIII*, 8th cranial nerve.

I propose here to take bearings from just one fundamental landmark, for the light which it may throw on the situation, and compare it with one proposed innovation. The landmark to which I refer is the one which defines the province of the physician and thereby establishes the functions, duties, and scope of the medical college, the place where he is prepared for his life work. The province of the physician is to prevent and relieve sickness, and to prolong life. To perform his functions he must be familiar with the nature and cause of disease—pathology; have the skill and means for determining its various phases—diagnosis; be armed with the best means for combating it—therapy; and be possessed of good professional judgment to guide him in his art. His pathology must be based upon anatomy, physiology and chemistry, the two former of which must be acquired within the walls of the medical school, simply because they have not yet become subjects of such widespread study for purposes of general culture that they can generally be acquired in other institutions, and

not because they are subjects of exclusive medical interest or use. For the same reason that chemistry, to have its truly medical aspect emphasized, is still taught in medical schools, anatomy and physiology will probably also continue to be taught there even when their study in institutions of general learning becomes much more extensive than it is now. The pathology of the medical student must always be taught in the medical schools. It constitutes a very large percentage of the subject matter of the curriculum, and demands a large part of the student's time. The subject is divided among many chairs, the etiological portions going to one or more departments, the general and comparative aspects to other departments, while special features are presented by the so-called practical chairs, or what should more properly be spoken of as the philosophical chairs. In

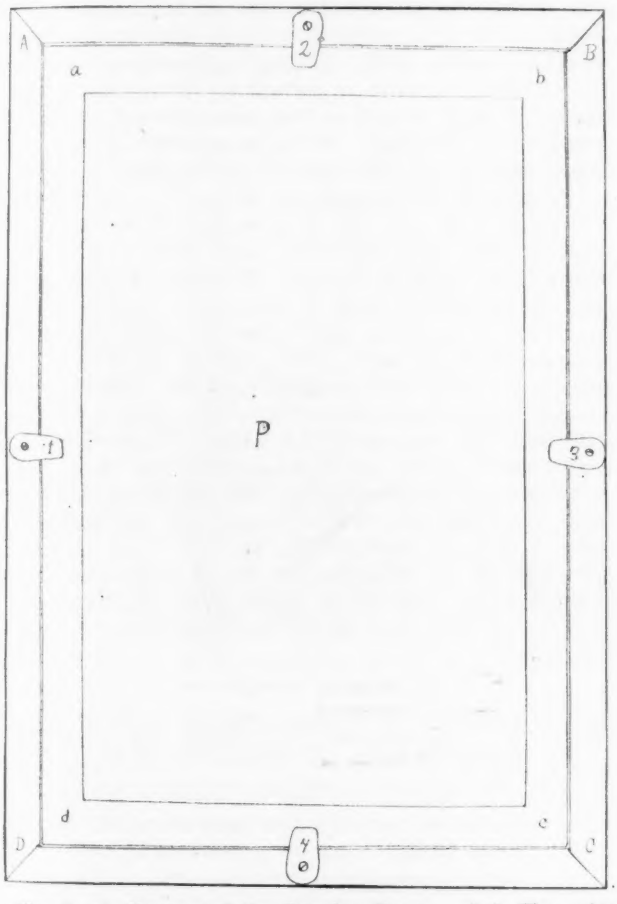

Fig. 8.—**A diagram of the Drawing Frame.** ***abcd,*** **The *outer* frame, which resembles an ordinary picture frame, in which the glass and drawing paper are placed; *abcd,* the *inner* frame, which fits into the outer frame behind the glass and drawing paper, holding them firmly in place: 1, 2, 3, 4, wooden "buttons," fastened each by a screw into the outer frame, and serving, when turned as in figure, to hold the inner frame tightly behind the glass and paper; *p,* space occupied by the glass and drawing paper.**

all of this work the student is gathering data, is securing information, of the importance of which he is but illy qualified to judge.

Having acquired a knowledge of the nature of disease, he is next introduced to the means of combating it. He is shown that therapy includes drugs, dietetics, and surgical, psychic and social factors, and the mastering of the data of this vast armamentarium is a work truly prodigious. And thus far, the work has still been wholly a collection of data. Now comes the work of the philosophical chairs whose duty it is to present the subject of diagnosis; to show the correlations of the data of pathology and the data of therapy, and to crown all with the training of the professional judgment. The art of diagnosis is necessary because diseases do not come labeled. Diagnosis is a purely logical procedure. In each of the great departments of human thought, the logic of that department has peculiarities of its own, and so the logic of medicine is peculiar to it. Certain methods of reasoning are especially fruitful of results; certain fallacies are apt to recur frequently, and to use the one and avoid the other requires training. It is convenient to group the peculiarities of medical reasoning under the term "medical mode of thought." I can not here undertake to prove the truth of these latter assertions, but am content to refer any who question them to Bain, who in his chapter on the Logic of Medicine, in his "Inductive Logic," has fully and conclusively set the matter forth.

Among the more recent innovations in medical education upon which divergence of opinion and practice exists, is that of completely separating the teaching of the basic sciences, usually presented in the first two years of work, from the remainder of the instruction. Closely associated with this, is the tendency to offer to undergraduate medical students, opportunities for original research in these basic sciences. It has been said that, "When a physician makes a diagnosis he follows precisely those methods of observation, comparison and experiment which are employed in original research." Granting the verbal accuracy of the language, the statement is still misleading. The statement is in principle true of every investigation from original research to common gossip. It is, therefore, too broad to be of any peculiar utility. It is misleading in that it implies that in original research, and in diagnosis the methods of observation, comparison, and experiment are identical, and that the fulness of diagnosis, conclusion, and that the end of research, truth, more general than specific, are both reached by similar acts of judgment. So long as the logic of medicine has its own peculiarities, its methods of observation, comparison and experiment can not be absolutely identical with those of anything else, not even with those of one of its basic sciences. But it is in the latter parts of the two methods of reasoning that the great differences occur. I shall endeavor to make this appear by analyzing the two processes of original research and medical diagnosis. Original research has for its object the determining of new truths of a more or less general character. The new truth may first exist merely as a creature of the imagination, an hypothesis. This hypothesis is then subjected to verification by experiment and observation. If the experiments and observations confirm the hypothesis so fully that no alternative or modifying hypothesis can be conceived of to limit the original hypothesis, that original hypothesis is accepted as a truth, but not until it is so completely verified. New truths may also be derived by direct comparison of data established by observation and experiment. A characteristic feature in research work is deliberation. The supposed new truth waits for its announcement, certainly at least for its acceptance, until a sufficiency of data has been collected to establish it beyond doubt. As Huxley[1] says: "There is one guiding rule by which a man may always find this path [to truth] and keep himself from straying when he has found it. This golden rule is—give unqualified assent to no propositions but those the truth of which is so clear and distinct that they can not be doubted." Any so-called re-

1. On Descartes' "Discourse."

search less critical is unworthy of the name. It follows, therefore, that a research must often wait, and wait indefinitely for the collection of the necessary data to round it out, and bring forth a just conclusion. A so-called conclusion to an incomplete research, hedged with the adjective "tentative" is no conclusion at all; it carries no responsibility. The time element therefore is an important feature in original research, and the time may be indefinitely prolonged. In medical diagnosis the problem is to determine the state of affairs in a given patient. The particular methods of obtaining the data are those peculiar to medical investigation. When obtained these data are often insufficient to afford a positive basis for any conclusion. Occasionally, conditions are such that time may be spent waiting for additional data, but much more frequently the decision must be made at once, for action is demanded, and that action is determined by the decision as to the meaning of the data. Frequently, it is quite impossible to obtain a sufficiency of data, because original research in correlated branches of knowledge has not yet formulated laws governing the conditions. But nevertheless a conclusion must be made, for action is necessary. The time element is here important also but the time must be short, or life may be the forfeit. It follows from this, therefore, that the tentative conclusion is common in diagnosis, and unlike the tentative conclusion in research, it is one involving great responsibility. Inasmuch then as tentative conclusions must be made in diagnosis, and as it is essential that those diagnoses be as accurate as possible, great care must be exercised in the methods of thought used in reaching these conclusions. To this end we have recourse to the Logic of Medicine, which has become the logic of medicine, precisely because experience has shown that it is the most potent in reaching the truth under such circumstances. The "medical mode of thought" therefore ought to be inculcated throughout the whole of the medical student's career. When the diagnosis is made, it must then be compared with the data of therapy, in order that a second conclusion may be reached, and this second conclusion is the one which formulates the specific action to be taken, and in making it, psychic and social factors must be considered as well as the purely medical, and here again the "medical mode of thought," the trained professional judgment, comes into action.

So far as research work trains observation it is good, but powers of observation can be trained equally well on pulse and tongue, facies and feces, as with the aid of balances and microtomes; so far as research work trains the judgment, it trains it in a bad direction for the young medical man. It tends to establish modes of thought which hamper rather than help him at the bedside. For anybody to do research work on problems formulated by some one else is largely child's play and hardly rises above the dignity of ordinary clerical work, while at the same time it tends to inculcate a sense of personal importance which is so far from the truth that it can not but be detrimental to its victim. The clinic is the field for medical thought and action. Resting upon its basic sciences, which are for its purposes tributary and subordinate, medicine has a systematized knowledge of its own, extensive in scope, highly complex, difficult to acquire, and requiring the best efforts of the best intelligences for its highest use. The systematized, truly medical knowledge may be designated by the word clinicism, which is the true science of medicine. The time for the medical man to undertake research work is when his experience has become sufficiently ripe for him to formulate his own problems; then his research work will have some life in it; his problems should be clinical problems, and certainly there are enough of them to satisfy the most varied tastes. The importance of inculcating the medical mode of thought and training professional judgment, is, in my opinion, so great that I would have them meet the student at every turn in his medical college career, from the very day of his entrance, and to this end I would have the teachers of the so-called scientific branches of the curriculum associated, as far as possible, with clinical work, and urge them to put themselves in constant touch with clinical men, that they may impress upon the student the professional bearings of their tributary work. The medical course is short enough now; it is difficult to find time to present all that should be presented to the student, and there is certainly no time to let him stray after strange gods. It is the business of the medical student to receive medical knowledge and to be trained in its use; he is under no obligations to add to the sum total of medical or any other knowledge. To-day an overwhelmingly large percentage of the physicians of the country devote their whole time to the application of medical knowledge to individual patients. It is right that they should. It is what the community expects of them. It will continue to be so in the future. With the few physicians who do research work, it is a side issue, and their real work is this same application of medical knowledge to individual patients. Such medical students as wish to engage in research work should limit themselves to it, and not hamper themselves with practice and they will find that their medical brethren will welcome every contribution of knowledge which they send out. If legislation should be for the benefit of the greatest number, so ought education, and to this end the medical college should keep its prime duty ever before it. It is the function of the physician to practice medicine; it is, therefore, the duty of the medical college to train him for that work. Let us make physicians rather than scientists.

NECESSITY OF A PRACTICAL KNOWLEDGE OF DIETETICS, HYDROTHERAPY AND PHYSICO-MECHANICAL THERAPEUTICS.

THE NEED OF ESTABLISHING COURSES OF INSTRUCTION IN THESE SUBJECTS IN OUR MEDICAL SCHOOLS.

FENTON B. TURCK, M.D.

CHICAGO.

Until very recently the profession has for the most part relied upon the administration of drugs for the alleviation and cure of disease—all other means except surgery being left to the abuse of charlatans and quacks. But it is the sign of the present state of scientific development, that the attention of the thoughtful has been called to the effects that may be obtained by agents not emphasized in books on materia medica, therapeutics, or in the pharmacopeia. The value of general hygienic conditions and of surroundings; the necessity of proper and systematic bodily exercise; the curative power obtained through the placing of the patient's mind in the proper psychological attitude; the importance of the use of a diet suitable to the case and to the individual; the bearing that heat and cold may have upon the bodily functions in general, and especially on the different parts of the human organism when intelligently applied; the efficacy of massage and electrical therapeutics—

all these are now recognized as forming important elements in the alleviation and cure of many pathologic conditions.

Since these means form so vital a part as therapeutic agents, it would seem that the time has come to consider the urgent necessity for the systematic teaching of their principles and the intelligent application of the most important and neglected of them. Broadly speaking, these would appear to be the subjects of dietetics, hydrotherapy, and physico-mechanical therapeutics.

The reasons for viewing these subjects mentioned as so extremely important are, that, in the first subject—dietetics—the question is involved of how life is sustained and nourished, with the laws that govern such a process—a fundamental proposition; in the second subject—hydrotherapy—the consideration is required of how the body and its parts are affected by three of Nature's most common and potent agencies, to whose modification we, and every form of matter, are more or less subject at all times—viz., heat, cold and water—the latter modified in temperature from the normal to one extreme or the other; in the third subject—physico-mechanical—is contained a pointed reference to the broad and universal truth, that the thing which has ceased to use or perform its functions has begun to die, that the exercise of function is one of the most potent factors in maintaining life, and that, if the individual is not able to maintain such exercise of himself, the question of some outward agency may help him to accomplish it, or that such agency may obtain for him in some way the physiologic results of such exercise, is a consideration the importance of which can not be overestimated.

In order to learn whether the necessity for the teaching of dietetics, hydrotherapy and physico-mechanical therapeutics was realized, and whether the need of such instruction was being met, the writer sent letters to the various medical schools and colleges throughout the United States, asking each for its bulletin, catalogue, or yearly announcement. Most of the institutions written to immediately responded. Upon examining the printed curricula of the different schools, it was found that the three subjects above referred to were for the most part given but small space in the general scheme of study, and in not a few institutions were entirely omitted from the course.

To get the voice of competent opinion from medical teachers (after learning the conditions as they were at the schools), the writer prepared a second letter, which he sent to the dean of each institution in the United States. The letter was as follows:

Dear Doctor:—I would like to obtain your opinion of the importance of teaching medical students three subjects now neglected in medical education, viz.: 1, Hydrotherapy; 2, Medical Gymnastics and Massage; 3, Dietetics.

The practical demonstration method of teaching these branches would not seem to burden the student, especially Medical Gymnastics, which would rather be a physical benefit and a mental rest.

Hydrotherapy and other physical methods of treatment seem now to be almost a necessity in the armamenture of modern therapeutics. This branch and Dietetics are left to the nurse or to the caprice of the patient. A thorough and practical knowledge should belong to every physician. The practical and scientific knowledge of these three branches would put a check upon quackery and ignorance.

Kindly answer enclosed questions, and oblige.

Accompanying this letter was a blank on which were printed five questions, as below. Over half of the representatives of the schools written to returned the blanks originally mailed, with complete answers written upon them. These replies fairly represent the consensus of opinion of the colleges and medical schools of the country, as they came from institutions of different types, both large and small. The questions were:

1. Are you in favor of including the subject hydrotherapy in the curriculum of medical schools?

2. If so, are you in favor of teaching by practical demonstrations in the hospital and dispensary, or by the didactic method?

3. Are you in favor of teaching medical students practical medical gymnastics and massage?

4. Do you consider the study of practical dietetics a necessary part of the student's education? The character and preparation of food, cooking, etc.? The physiology, pathology, and therapeutics of dietetics?

5. What would you suggest as the most practical method of teaching this branch? Practical demonstration or otherwise?

To the first question, out of 59 answering, 1 replied: "Not as an undergraduate study;" 2 replied: "No;" 39 replied in unqualified terms: "Yes;" and the balance answered that hydrotherapy was already being taught as a branch of general therapeutics, or that they advocated its so being taught, but not as a special subject by itself. In all of these replies, save two, the prime importance of the serious consideration of hydrotherapy is fully recognized.

To the second question, out of the same number of letters received, 3 gave no answer; 1 replied: "No;" 1 advocated the didactic method; 16 advised practical demonstration; and 38 suggested both practical and didactic methods as likely to afford the best results.

To the third question, 1 gave no answer; 1 was undecided, not having given the subject sufficient study; 1 replied: "Yes; not under these names, however, but as a sub-topic of general therapeutics;" 1 answered: "Desirable, but doubtful whether time is sufficient;" 2 said: "To a limited extent;" 46 wrote unqualifiedly, "Yes;" and 7 answered, "No."

To question No. 4, 1 gave no answer; 1, "In a limited way;" 1, "Business of the nurse," 1, "Not as a separate course;" 1, "Desirable, but can't see how it can be accomplished;" 1, "Questionable whether it can be introduced into four years' curriculum;" 1, "Character and preparation of food, yes; cooking, no;" 3, unqualifiedly, "No;" 49, unqualifiedly, "Yes."

To the fifth question, 16 made no reply; 3 said that dietetics is already sufficiently taught by didactic and practical methods in their institutions; 4 advocated lectures and didactic methods; and 36 preferred practical demonstration in the hospital, coupled with theoretical teaching.

On reviewing and analyzing these various answers, it will be seen that there is an overwhelming majority of those who favor the establishment of some method by which the subjects we are considering may be more carefully and systematically taught; and that the greater number of those who have replied to the questions propounded lay very great stress on the importance of teaching by practical and illustrative methods.

Together with these answers written on the printed slips, and categorically replied to, many letters were received, giving the personal opinion of the writers as teachers and professors. The following are included here, as showing that not only are dietetics, hydrotherapy and physico-mechanical therapeutics not sufficiently

taught, but that there is a genuine and urgent demand on the part of trained medical educators for placing these branches in the curriculum of the schools:

David Streett, Dean of the Baltimore Medical College, Baltimore, Md., says:

. . . There can be no question about the importance of teaching Hydrotherapy; indeed, such has been done a number of years, its importance in the medical curriculum growing each year; and of Dietetics there are few subjects of more intrinsic importance to the practitioner, as well as to the surgeon. As to Medical Gymnastics and Massage, I think they are less important than Hydrotherapy and Dietetics; still they eminently deserve a place in our medical curriculum, provided there be found time for their teaching. . . . I regret to state, in my judgment sufficient importance has not been attached to the thorough knowledge of these two subjects.

Victor C. Vaughan, Dean of the University of Michigan, favors instruction in these three subjects, and says:

I know I talk three hours a week for three months on this subject, and give them a good grounding in the scientific principles of Dietetics. . . . As to Hydrotherapy, our students get considerable instruction along this line. . . . We also give considerable instruction in Medical Gymnastics and Massage. . . .

One correspondent, Dr. A. F. Jonas, Dean of the Omaha Medical College, and President of the Western Surgical and Gynecological Association, writes:

. . . I feel that the three subjects mentioned should occupy a first rank in our therapeutics; but, for some unknown reason, they have been neglected by our schools the world over. It is in the use of these particularly that "quackery" has obtained a large part of its capital stock. I am sure that if these subjects will be scientifically taught and properly applied by the profession, we will have added to our armamentarium most important factors for good.

H. G. Brainard, Dean of the College of Medicine, University of Southern California, Los Angeles, says:

. . . I feel very strongly on the point that some systematic teaching should be given in the medical college in regard to the use of Hydrotherapy, and in regard to Dietetics. I do not feel so sure about the question of Medical Gymnastics and Massage. While I think that a more thorough knowledge of these subjects would be beneficial, it does not seem so imperative as a more thorough knowledge of Hydrotherapy and Dietetics. Though I presume that a thorough knowledge of gymnastic manipulations and massage would drive osteopathy out of the field.

Dr. E. O. Sisson, Dean of the College of Physicians and Surgeons, Keokuk, Iowa, writes:

I hasten to give affirmative answers to the questions you have propounded, for I believe you have struck the keynote, and that the introduction of such teaching will mark an epoch in medical science.

The only school that I know of that carries out practical instruction in Dietetics is the Medical Department of the Minnesota State University, and the professor of that department told me that it was not compulsory there. They have a very complete laboratory, fitted with gas ranges, and the necessary cooking appliances, and each student prepares his own dishes.

Medical Gymnastics, as you say, would not burden the student, but would rather be a physical benefit, and a mental rest.

Hydrotherapy, although taught to a greater or less extent in most schools, it is very seldom that a practical demonstration is given of it.

I heartily agree with your statement that "a practical and scientific knowledge of these three branches would put a check upon quackery and ignorance."

We are dealing with subjects here, the value of which thinking people must realize sooner or later, and the physician by an intelligent practice of such will do a great deal towards doing away with the superstition and mystery with which the charlatan has always loved to surround the practice of medicine.

In my lectures on Hygiene to the medical students, I try to impress upon them the value of these subjects, but as my work is necessarily all didactic I fear they fail to take the interest that they should, and therefore they do not realize the importance of the subjects. In my lectures to the nurses, where there is more opportunity for practical demonstration, I believe that more is gained.

I certainly wish you success in your investigation, and hope that your work will be productive of much good.

Dr. S. W. Williston, Dean of the School of Medicine, University of Kansas, says:

I believe that all these subjects should find a place in medical instruction, and, of course, wherever taught, they should be, so far as possible, taught by the laboratory method, that is, by actual doing or seeing done.

Dr. Alfred C. Wood, of the University of Pennsylvania, Philadelphia, writes:

Of course, I appreciate the difficulty of having hours set apart for these subjects in a curriculum already so full; at the same time, in my opinion the necessary readjustment should be made to admit these subjects.

Besides reports from the medical schools the writer has received similar complete reports from many of the editors of our medical journals, and also from the president and other officers of the state medical societies, offering their views and comments as to the importance of more practical instruction in these subjects.

Lack of space prevents the publication of these reports here.

In order intelligently to approach the question we are considering, and that practical suggestions of value may be made, it will be well to review what consideration is generally being given to hydrotherapy, dietetics and physico-mechanical therapeutics, and how they are being taught.

From the replies we have received, it would seem that small part of the attention due these subjects is being paid them. The physiology of dietetics is usually embodied as a part of the lectures under the chair of physiology in the first year of the student's course. In the majority of the colleges the subject is not made plain by any means of actual demonstration; while the therapeutics of dietetics is taught, only incidentally, in connection with the subject of general medicine, usually in the fourth year. The student graduates, with superficial instruction in, or practically ignorant of, the application of dietetics in health or disease. A large number—nay, the larger number of the graduates of our schools—afford examples of the deficiency of knowledge of the composition of foods, the chemical changes taking place in cooking, the digestibility and the absorbability of the various forms of nutriment. And from this it also follows that there is a woeful lack of the understanding of the therapeutics of dietetics, which latter involves the practical application of the facts and laws of this subject in the treatment of different diseases.

The very important subject of hydrotherapy, which comprises the application of water internally and externally, from solid to fluid and vapor—from ice to steam—depending for the result upon the judicious adaptation of its mechanical and thermal influences, is being neglected also. This branch of therapeutics it is customary to teach from the chair of general therapeutics; in most cases, merely by didactic methods. As a result,

the student has neither a definite knowledge of the physiologic action of water, which can only be gained by practical experience, nor the understanding of its intelligent application in diseased conditions. The effect of heat in all its variations of temperature, with such a wide range of therapeutic uses, is of both scientific and clinical importance.

Physico-mechanical therapeutics, which embraces medical gymnastics and massage, with some forms of the application of electricity, is not less important than the other two subjects, and what may be said in regard to the lack of proper training and instruction in these two may apply to the other.

Practical dietetics can not be universally introduced without the free use of hospitals equipped with dietetic kitchens; but in schools where such hospital facilities are at hand, a section of the class could take its turn under a competent instructor, certain hours in the day, during the week, in acquiring the accurate knowledge of the preparation of foods and their proper administration in the cases being treated in the institution. The effects could then be readily appreciated by actual demonstration; and thus another and most important element would be added to the skill of the future practitioner.

No objection, however, can be urged against the illustrative method of teaching hydrotherapy and physico-mechanical therapeutics. Every school is equipped with college dispensaries. All that is needed is to arrange a room, or suite of rooms, equipped with the necessary appliances for the application of water in various forms, and with the different mechanical apparatus to be used. These arrangements may be as elaborate or simple as the school can afford. A separate, or adjoining room may be equipped for placing the patient where he may obtain the benefits of the various forms of physico-mechanical therapeutics. In the customary division of students into sections, for the different dispensary classes, a certain number can readily be allotted to each of the rooms above mentioned, just as they are assigned now to the rooms for instruction in surgery, gynecology, nervous diseases, general medicine, dermatology, etc. The clinical material may come direct, or may be referred from the other departments of the institution. Students will gain more exact knowledge by being called upon to assist the instructor in his daily work; and more patients can be treated when the students are turned into assistants—which is a double gain. This method would not trespass on the time allotted to other work, or unduly press upon the strength of the student; and therefore it would appear to be perfectly feasible. As the value and practicability of the subjects we have been considering become further recognized by the faculties of our medical schools, special elective courses may be established, under trained instructors, in order to give the student theoretical and practical teaching combined. The writer has found in his own experience in teaching that these practical methods are easier for the student. They give him an opportunity to learn more accurately by actual observation and experience, associating the clinical importance of the case with the therapeutic measures used.

It will thus be seen that such observation and experience will help the student to comprehend the pathologic condition of the patient—whether a medical or surgical case, and he is better enabled to grasp the clinical and scientific phenomena presented to his mind. The significance of medical teaching will become real, better understood and more easily remembered. The accumulated facts obtained from didactic teaching will also thus be better utilized, and the mind stimulated for further investigation and study.

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THE SEMINAR METHOD IN MEDICAL TEACHING.

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CHICAGO.

The present is a time of great change in methods, as well as in the principles of pedagogy in our medical schools. The extent of medical science is so great that no individual can expect to be master of the whole field. The duration of the course preparatory to the practice of medicine is now long enough, and the preliminary education is now thorough enough to allow the best methods of study to be used. For a certain part of the medical curriculum there is no plan of teaching which promises so much as the seminar.

In previous publications[1] I have called attention to my own efforts in this direction. It is my purpose here to make another plea for the more general adoption of the seminar, in teaching almost any topic of interest to the student.

In order that we may understand each other, let me say that the seminar is a method in which each member of the class does independent laboratory, clinical or library work on a subtopic of general interest to the class as a whole, this subtopic chosen by the student or assigned by the teacher. The seminar is a meeting of the students and the teacher to hear, question, criticise and discuss the work of individuals. When the seminar meets for the first time the teacher presents the general subject in the form of a lecture, in the course of which the whole topic is outlined and interesting questions are put forward. From these questions and the outline, and from a knowledge of the individual members of the class, the assignments of subtopics are made. A student takes his assignment and studies up the question, and at the next or some subsequent meeting of the seminar, he presents to the class in such a manner as the case requires, the results of his study. This time it may be an analysis and blackboard talk, the next time a carefully-written abstract, then again a microscopic demonstration and written paper, or later and more complete than any of these, a finished thesis. During the presentation the student who has the floor is in the position of the teacher. The teacher for the moment becomes one of the students. At any moment during the presentation questions may be asked or explanation required. At the end criticsms are to be expected. Such exercises, like laboratory investigation, are time-consuming. The student should have not less than one-half his daily study time for a seminar of two hours a week. The seminar class should not exceed 20 students, selected by their interest in a topic or in the teacher. The management of larger classes is limited to unusual teachers and special topics and methods of procedure. In a very limited field I have used the seminar with a class of 150 students.

The seminar presupposes an elective course. In no other way can the student have time for the exhaustive

1. Holmes, Bayard: "The Seminary Method in Teaching Surgery." THE JOURNAL A. M. A., Aug. 8, 1896, *et seq.*

study of a limited number of subjects. The student will, however, be bound to learn in the course of this study most of the general information which lectures and text-book study is intended to teach. The seminar requires an open library of current and standard medical literature and an ability on the part of the student to make economical use of it. The library must be open during all reasonable study hours, e. g., from 8 a. m. to 10 p. m., and it must be thoroughly catalogued even down to the monographs and important articles in the serials. It will often, in the course of a study, be necessary to get material from the Surgeon General's Library and even to make purchases, and provision should be made for these contingencies so that there will be no paralyzing delay. The laboratories, museums, collections, clinics and other equipment of the college must be at ready and unobstructed, even helpful, disposal of the student. If the student has for his topic the appearance of fat necrosis in gallstone disease, he may require not only the literature from the library, specimens from the museum and laboratory, but he may need to undertake considerable correspondence with pathologists and surgeons, and even wait for autopsies or operation specimens.

The seminar is certainly a poor method at the beginning for the bottle-fed incompetents of our compulsory, graded medical course, but many of them even grow and thrive under the exercise and liberty of the seminar and in moments of forgetfulness manifest the ardor of enthusiasm. But there are always some in every class who bear with difficulty the straitjacket of a required course and the lockstep of class instruction, and these erratic men are the delight of the seminar. They plunge with fervor into their subject and devour the literature. They seek on the cadaver or at the operation table the positive anatomical knowledge which their topic requires. They leave no stone unturned which promises the least elucidation of the subject, and they present the results of their study to the class in a convincing argument and with a persuasive enthusiasm.

There are, of course, certain conditions which the student must meet. He must have a motive for study based for the most part upon a considerable amount of bedside experience. Unless the student is actually in the position of the physician with the immediate obligation to cure the patient safely, quickly and pleasantly, he does not possess the strongest, truest and surest motive for study. When this motive is lacking it can often be supplied by giving the student the necessary patient, or by taking such a topic as the student has already met in his practice. When all other means fail, the student's own ailments or deformities may secure the necessary interest.

The student must also have such a preliminary literary training as will make his routine work perfect in form and availability. It is necessary sometimes to secure at the beginning a chirography suitable to such accurate and manageable work as this form of study demands. Every page must be written as perfectly as if for the printer. The slipshod penmanship which the ordinary note-taking in our medical schools begets, entirely precludes the idea of good work. The student must, from the first, do all his work neatly, in an orderly manner and completely, so that it may never require revision or correction. It is only by writing a library hand or something approaching it that good literary work of such a technical character as medicine requires can be satisfactorily done.

The student must know how to use the library. Only a rare librarian can put students in the way of using the library independently. The shelves as well as the catalogue should be accessible to students. The stacks should be in alcoves, with tables and writing material handy, so that the student, after his ability to find them and replace them has been established, can easily consult many books without troubling the librarian. The same may be said of the laboratory and museum. In order that the student may master his subject completely he must be able, if the subject requires it, to study the anatomy of the part concerned in a thoroughly equipped anatomic laboratory, in the pathologic laboratory and in the autopsy room. In fact, the seminar method of study presupposes for its fullest utilization a complete co-ordination and co-operation of all the resources of the medical school. Through its best and freest use the student becomes an investigator of the topic in his hand, of the literature of the various aspects of his subject, and incidentally of the history of medicine itself. The student is put or puts himself in the position which he will occupy after he leaves the school when he attempts to study any medical topic suggested by the requirements of his practice.

Last of all, through the seminar, the medical teacher may secure for the profession the careful literary and experimental study of a large and growing number of subjects which he can never have time to follow out by himself, and he may be instrumental in bringing these subjects before the profession through his students' theses. A considerable number of the most valuable contributions to medical literature comes to us now through the theses of applicants for the doctor's degree in foreign universities. The American students are not less talented or diligent. Our teachers are not less devoted. The continuous course which many medical schools are adopting promises that the end of the course shall be punctuated by the return to the discarded thesis. To make the thesis possible or valuable a considerable portion of the curriculum must be conducted on the seminar plan, whether it is called by that name or not.

MEDICAL EDUCATION.*

J. R. JONES, M.D.
WINNIPEG, MANITOBA.

The writer, after considering the several phases of the subject of medical education, registration, etc., as they apply in Canada, said:

PROFESSIONAL EDUCATION.

The medical curriculum has subjects difficult to acquire, worthless as mental gymnastics, useless in practice and speedily forgotten when acquired. The methods of teaching are imperfect and vicious. The student in didactic lectures is not taught—he is over-lectured and under-taught. The lecturer describes rather than demonstrates and instead of making the student follow him step by step in his methods of observation, collecting, comparing, testing, and recording facts and of reasoning thereon, the didactic lecturer leaves them to be learned by being described, forgetful that they can be learned only by being practiced.

The main tendency of the present method of didactic lectures is to give students smatterings of scientific knowledge at the cost of that thorough knowledge of their art which is essential to its successful exercise. In the curriculum there is overlapping of similar subjects in the didactic and clinical courses. The course of didactic lectures should be entirely abolished or radically modified. Teaching should be bedside

* Abstract of the Address in Medicine, delivered before the Canadian Medical Association, Winnipeg, August 28.

work, oral and written examinations with comments by the teacher. In analyzing the didactic course, I would like to direct the attention of the Association to several defects and useless waste of time which could be more profitably employed.

What use is there for a didactic lecture on descriptive anatomy; a subject which can only be mastered in the dissecting room. Professor McAllister, of Cambridge, states that anatomy being a practical subject can be learned only in the dissecting room. The line of demarcation between descriptive and practical anatomy is arbitrary and fanciful. In a large class in descriptive anatomy, the favored few near the lecturer and the dissected part derive some instruction, but to all the rest the hour is useless and wasted. Persistent work in the dissecting room under the guidance of an experienced demonstrator who will describe, discuss and constantly orally examine the student is the rational and effective method of teaching anatomy.

Another useless subject is Medical Jurisprudence; the interest in it ends after the examination and to the general practitioner the knowledge thus gained is of no practical value. Few men are called upon to give evidence in criminal cases, and when they are the knowledge acquired while at college is either useless, fragmentary or forgotten, and in order to cut a respectable figure in court, we frantically read up Taylor and Reese. All knowledge is useful, but that derived from Medical Jurisprudence is about as practical to the general practitioner as the geography of Timbuctoo or the philosophy of Confucius. The object of medical teaching is to turn out good practitioners.

Another subject as at present taught which is a weariness to the flesh is Sanitary Science. Its pretensions are stupendous; it is supposed to teach everything—land surveying, architecture, organic chemistry, agriculture, plumbing, drainage and civil engineering. The student is crammed with this conglomerate stuff, which he must intelligently reproduce at the annual examination. In Sanitary Science we have a splendid exemplification of the "cram" system and the utter uselessness of the knowledge, the very essence of smattering. . . .

The burden of the medical student of to-day is very great. More attendance at lectures are demanded, more subjects are being wedged into the curriculum. That a conglomerate heap labeled "Materia Medica" might be treated in a bag and baggage fashion. It is impossible to encompass this large mass of dry technical knowledge in the student's course. Materia medica is a mere tax to the memory—the acquisition largely of bare facts being necessary and facts that are neither retained nor applied. Mr. Huxley's views in an address to the students of St. Mary's Hospital are appropriate. He says: "I am quite prepared to admit, and, indeed, I have always had a strong conviction that there is something absolutely preposterous in the volume and bulk to which some of our treatises on materia medica extend, and the enormous quantity of irrelevant matter with which their pages are crammed." What scraps of information can a didactic lecturer impart to his students which they can not readily find in the text-books! An occasional quiz class with specimens of drugs and their preparation should take the place of the systematic lecture; in fact, let pharmacy and therapeutics take its place. . . .

The system of imparting instruction by lectures is a mediæval custom originating when text-books were few, costly and inaccurate. It is a purely traditional system. Now that there are text-books in abundance covering the whole range, and of excellent merit, these lectures should be modified. The chief value of lectures is that the student is obliged to hear a certain quantity of a subject every day whether he likes it or not, while no authority can compel him to work at a text-book except by moral suasion or arguments of a practical character addressed to his self-interest. A restricted number of lectures may be advisable, but the number could be abbreviated with advantage, and confined to the inculcation of principles; removing difficulties and obstacles from the student's path; explaining types and divergencies of disease; giving information not within the pages of a text-book. The time hitherto employed in systematic lectures might be devoted to class examination on previously announced subjects in which the teacher should indulge in questions, explanations, corrections and comments. This is the true education—a drawing-out instead of a pouring-in process. The lecture system reminds one of the daughters of Danaus, whose destiny was to fill pitchers which could hold no water; the students are percolated receptacles of transitory knowledge. . . .

The "Case" method advocated by Mr. Cannon, of Harvard University, in March, 1900, has received the indorsation of many teachers in England and the United States. This method is supposed to supplant the dreary old-fashioned didactic lecture, and is an imitation of the plan adopted in the law department of Harvard. The plan is to secure printed histories of actual cases which perhaps the student may have seen in the hospital. Each student is previously supplied with a printed copy of the history for careful perusal sometime prior to the discussion. The class and teacher meet and discuss the diagnosis, pathology, symptoms and treatment. Text-books and other literature are consulted, and the case is thoroughly thrashed out. The student is learning the judgment of clinical data, the estimation and relative value of the various symptoms, distinguishing between the important and the unimportant, the common features and the more unique. He not only receives but acquires knowledge. The Case method may supplant or supplement the didactic and clinical courses. This plan is no experiment for it has been on successful trial by several professors at Harvard, by Dr. J. White, of Philadelphia, and Dr. R. E. Riggs, of the University of Minnesota. Possibly I may be prejudiced, but from personal experience I favor the English system of clinical clerkships and dresserships as the most feasible, practical and thorough for the development of medical teaching. It embraces all the advantages claimed by the advocates of the "Case System" and the sectional plan. Moreover, the student is brought into direct contact with the patient for whose history he is responsible. By this method the medical student is trained to habits of minute, careful methodized observation and registration of the phenomena of disease. The student observes his cases from the incipient stage to either recovery or the post-mortem room, to the verification or otherwise of his daily recorded observations. Upon this solid foundation of actual personal experience, he builds to fit himself for life's battle.

Malarial Cases Must Be Reported.—Private physicians, public institutions, hospitals and asylums of New York City, are required to report all cases of malarial fever that come under their observation to the Board of Health. At a recent meeting of the board the following resolutions were adopted: Whereas, Recent investigations have shown that malarial fever is an infectious disease and can be largely prevented by the adoption of simple precautions, and Whereas, It is the desire of the Department of Health to prevent the extension of malarial fever, which now exists in some of the boroughs, to the other boroughs, and to restrict its prevalence in those boroughs where it already exists; Resolved, That all public institutions, hospitals, homes, asylums, etc., be required to report all cases of malarial fever which come under their observation, giving the name, age, sex, occupation and present address of the patient, and also information as to whether the attack is a primary infection or a relapse, and the address where the disease was probably contracted. Resolved, That all physicians in the city of New York be requested to furnish similar information in regard to patients suffering from malarial fever under their care. Resolved, That the circulars of information of the Department of Health regarding the causation and prevention of malarial fever be mailed to the addresses in which malarial infection has apparently been contracted, and also to the addresses from which the cases are reported, when these are different. Resolved, That postal cards for furnishing the required data be prepared and forwarded to institutions and physicians for reporting the cases of malarial fever which come under their observation, as is done in other infectious diseases.

MEDICAL SCHOOLS IN THE UNITED STATES.

Below is given a brief description of every college in the United States that is legally chartered to confer the M. D. degree and whose diploma is recognized by at least one state licensing board. The list includes the sectarian as well as the regular colleges, as their graduates are physicians in the eyes of the law. The order in which the colleges are placed is according to date of organization, grouped in cities. The information given is obtained, as a rule, from the catalogues.

ALABAMA.

Alabama, population 1,828,697, has two medical colleges, the Medical College of Alabama and the Birmingham Medical College.

Mobile.

MEDICAL COLLEGE OF ALABAMA.—This is the medical department of the University of Alabama, and was organized in 1859. It is located in Mobile, a city of 38,469 inhabitants. The City Hospital, under the management of the Sisters of Charity, furnishes free clinical material. The faculty consists of 9 professors and 17 lecturers, 26 in all. It is well equipped with buildings, laboratories, dispensary, etc. Its requirements for admission are those of the Southern Medical College Association. The course of study is graded and covers four years of six months each, but students entering on medical college work prior to the session beginning in 1899 may be graduated in three years. The total fees for each of the first three years is $100; for the fourth year, $125. Board and lodging, $3.50 to $5 per week. The Dean is Dr. George E. Ketchum, Mobile, Ala. Total registration, 1900-1901, 130; number of graduates, 38. The thirty-sixth session will begin on Oct. 8, 1901, and will close April, 1902.

Birmingham.

BIRMINGHAM MEDICAL COLLEGE.—This school was incorporated in 1894 and is situated in Birmingham, a manufacturing town of 38,415. The clinical advantages are good. The Hillman, St. Vincent's, Pratt and County hospitals are accessible to the students. The clinical, histological and pathological laboratories are well equipped. There are 12 professors and 8 lecturers; total teachers, 20. The requirements for admission are those of the Southern College Medical Association. The course of instruction is a graded one and embraces four separate sessions of six months each. Those commencing prior to January, 1899, can graduate after three years. The fees are $75 for each of the first three years and $105 for the fourth. Good board can be obtained at from $12 to $20 per month. The Dean is Dr. B. L. Wyman, 212½ N. 20th St., Birmingham. Number of students registered last session, 77; number of graduates, 15. Next session opens Oct. 2, 1901, and closes April 1, 1902.

ARKANSAS.

Arkansas, population 1,311,564, has one medical college.

MEDICAL DEPARTMENT OF THE ARKANSAS UNIVERSITY.—This college is located at Little Rock, which has a population of 38,307. It was organized twenty-two years ago as the Arkansas Industrial University Medical Department. It belongs to the Association of American Medical Colleges, having become a member of the Association at its organization, and the requirements for admission are those of that Association. Hospital facilities are furnished by "Logan H. Roots Memorial Hospital," St. Vincent's Infirmary, and Pulaski County Hospital, the latter having a capacity of 200 beds. The teaching body consists of 21, Dr. F. L. French, Little Rock, being Secretary of the faculty. The fees are: Matriculation $5, paid but once; annual fees $58, and graduation $25. Board and lodging costs from $13 to $18 per month. Total number of students at last session, 240; graduates, 20. The next course of lectures begins Oct. 4, 1901, and ends April 11, 1902.

CALIFORNIA.

California, population 1,485,053, has six medical colleges. Five are located in San Francisco, a city of 342,782 inhabitants. They are Cooper Medical College, Medical Department of the University of California, California Medical College, Hahnemann Hospital College, and the College of Physicians and Surgeons. The clinical facilities of San Francisco are good, and board and lodging can be obtained for from $20 to $30 a month. The other, the College of Medicine of the University of Southern California, is situated in Los Angeles, population 102,478. Board and lodging can be obtained in that city for $4 a week and upwards.

San Francisco.

COOPER MEDICAL COLLEGE.—This school was organized in 1858, though its present name was not adopted until 1882. The faculty consists of 17 professors, and 13 lecturers, demonstrators, etc., 30 in all. Lane Hospital, adjoining the college; the City and County Hospital, containing 464 beds, and the college dispensary furnish clinical material. The requirements for admission are that the applicant must show by certificate or examination sufficient knowledge of English grammar and composition, United States history, geography, arithmetic, elementary physics, Latin grammar and translation, and some knowledge of another modern language or science. After August 15, 1902, the requirements will be raised to equal those of admission to the State University. The college building supplies good laboratory and lecture-room facilities. The curriculum covers a graded course of four years of eight months each. Fees: First year, $115; second, $110; third, $100, and $125 for the fourth year. The Dean is Dr. Henry Gibbons, Jr., 920 Polk St., San Francisco. Total registration for 1900-1 was 167; graduates, 27. The present session opened August 15, 1901, and will close April 29, 1902.

MEDICAL DEPARTMENT UNIVERSITY OF CALIFORNIA.—This department of the State University was organized in 1872, and has a faculty composed of 17 professors, 9 associates and lecturers, 14 instructors and assistants, a total of 40. The City and County Hospital, which admits students of this school not only to the clinics proper, but also to its wards for study, and the college dispensary furnish good clinical material. The senior class is divided into sections of six students each and bedside instruction is given them five days a week. Practical laboratory examinations are required of the students in the laboratories of the hospital, and practical obstetrical demonstrations are given at the bedside. The building is commodious and furnishes good laboratory and lecture-room space. The course covers graded work for four years of eight months each. This school is a member of the Association of American Medical Colleges, and the requirements for admission are those prescribed by that organization. The total fees for the first year are $115; second, $110; third, $100, and $125 for the fourth year. The Dean is Dr. Arnold A. D'Ancona, San Francisco. Total registration for 1900-1 was 164; graduates, 28. The thirtieth session opened August 15, 1901, and will close May 15, 1902.

CALIFORNIA MEDICAL COLLEGE.—Eclectic. This school was organized in 1878. Its faculty includes 14 professors, 8 lecturers and 6 instructors, a total of 28. The clinical material is supplied by the Maclean Hospital. Applicants for admission not holding diploma or certificate are examined. The course has been extended to cover four years of eight months each. Total fees are about $110 for each of the first three years and $40 for the fourth year. The Dean is Dr. D. Maclean, San Francisco. Total registration for 1900-1 was 49; graduates, 10. The next session opens October 7, 1901, and closes May 21, 1902.

HAHNEMANN HOSPITAL COLLEGE.—Homeopathic. This was organized in 1884, and has a faculty of 20 professors, and 18 lecturers, instructors, etc., in all 28. The Pacific Homeopathic Polyclinic, the Homeopathic Sanatorium and the San Francisco Nursery for Homeless Children and Marie Kip Orphanage, accommodating respectively 75 children and 120 girls; Fabiola Hospital, and the City and County Hospital furnish clinical material for study. Matriculants must possess a knowledge of English composition, arithmetic, geography, history and Latin, as evidenced by certificate or examination; however, one year after entrance is permitted in which the student may prepare himself. The course includes four years of seven months each. Total fees for the first year, $160, and $75 for each of the other three years. The Dean is Dr. James W. Ward, 606 Sutter St., San Francisco. Total registration for 1900-1 was 40; graduates, 6. The nineteenth session opened May 16, and will close December 12, 1901.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1896, and has a faculty of 10 professors and 26 associates, lecturers, etc., 36 in all. The City and County Hospital, 32 beds of which are available to students of this school for bedside instruction; St. Winifred's Hospital, with 100 beds; City Receiving Hospital, and a sanatorium at San Mateo supply material for clinical instruction. Applicants for matriculation must show an equal amount of work done or pass a satisfactory examination in English, history and government, geography, physics, mathematics and Latin grammar and translation. The college building, recently completed, is large and well supplied with laboratories and lecture rooms. The curriculum embraces four years of six months each. Fees: First year, $90; second, $85; third, $75, and $100 for the fourth year. The Dean is Dr. D. A. Hodgehead, San Francisco. Total registration for 1900-1 was 171; graduates, 38. The next session opens January 2, 1902, and closes June, 1902.

Los Angeles.

COLLEGE OF MEDICINE, UNIVERSITY OF SOUTHERN CALIFORNIA.—This school was organized in 1885, and has a faculty of 21 professors and 10 instructors, etc., 31 in all. The County Hospital, having 200 beds, and a college dispensary furnish clinical material. Applicants for admission are required to pass an examination in English, arithmetic, elementary algebra, physics and Latin equal to one year's work, unless they can show by certificate that they have covered that ground. The building is amply provided with laboratories and lecture rooms. A graded course, covering four years of twenty-six weeks each, is offered. The total fees for the first year are $145; second and third, $130 each, and $40 for the fourth year. The Dean is Dr. H. G. Brainerd, 315 W. Sixth St., Los Angeles. Total registration for 1900-1 was 87; graduates 19. The next session opens October 25, 1901, and closes June, 1902.

COLORADO.

Colorado, with a population of 539,700, has four medical colleges. Three of these are in Denver, which has a population of 133,859: Denver College of Medicine, Gross Medical College and Denver Homeopathic College; the other, the Colorado School of Medicine, is at Boulder. The clinical facilities in Denver

available to the three colleges are the Arapahoe County Hospital, which has a capacity of 225 beds; St. Joseph's Hospital, with 200 beds, and St. Luke's Hospital, with 75 beds. The Public Library contains 10,000 volumes on medicine. Board can be obtained in Denver for $5 a week and upwards.

Denver.

DENVER COLLEGE OF MEDICINE.—This is the medical department of the University of Denver, and was organized in 1880. Besides the clinical advantages offered in the above hospitals, the State Home for Dependent Children and the City Contagious Hospital are open to its students. The faculty is made up of 35 professors and 11 lecturers, 46 in all. Its location is central and the buildings are well arranged for laboratory, dispensary and didactic work. The course is graded and covers four years of eight months each. This college is a member of the Association of American Medical Colleges and its requirements for admission are governed by the rules of that Association. Final examinations at the end of each year are held. The fees for the first year are $90; for the next two, $86, and for the fourth year, $101. Dr. Henry Sewall, 23 Eighteenth Ave., is Secretary. Total registration 1900-1, 60; number of graduates, 20. The twenty-first session began Sept. 6, 1901, and will close May, 1902.

GROSS MEDICAL COLLEGE.—This is the medical department of the Rocky Mountain University, and was organized when that institution was founded in 1887. Situated in Denver, the clinical facilities are good, and besides the hospitals used in common by all, St. Anthony's Hospital and the National Jewish Hospital for Consumptives are claimed for its students alone for clinical material. The faculty consists of 28 professors and 16 lecturers, 44 in all. Its buildings are well adapted for didactic, clinical and laboratory teaching. Its requirements for admission are those laid down by the Association of American Medical Colleges, of which this college is a member. The course of study covers a four-year graded course, eight months constituting a year. The total fees for the first two years are $100 each; for the third, $90, and for the fourth year, $75, except to students who matriculated prior to the session of 1900-1 and who have attended their four years at this college, in which case the fourth-year fees are $85. The Secretary is Dr. Robert Levy, California Bldg., Denver. The total registration for 1900-1 was 78; number of graduates, 15. The fifteenth session began Sept. 11, 1901, and will close May, 1902.

DENVER HOMEOPATHIC COLLEGE.—This college was organized in 1894. Besides the Arapahoe County Hospital, exclusive privileges for clinical work in the Denver Homeopathic Hospital, the Haven and the Belle Lenox Nursery are claimed for its students. The faculty is made up of 19 professors, and 12 lecturers and instructors, 31 in all. The requirements for admission are, "possession of a diploma from a literary college, university, an academy, a normal or high school; a first grade teacher's certificate, or a previous matriculation at some reputable literary or medical college." The course of study consists of four years of seven months each; monthly examinations are held in each subject. A five-year scholarship may be had for $300, payable in advance, otherwise the tuition is $100 a year; there is a matriculation fee of $5, payable once. The Dean is Dr. James P. Willard, Masonic Temple, Denver. Total registration for 1900-1 was 41; the number of graduates, 5. The eighth session began Sept. 18, 1901, and will close April, 1902.

Boulder.

COLORADO SCHOOL OF MEDICINE.—This is the Medical Department of the University of Colorado, and was opened in 1883. It it situated in Boulder, a town of 6150 inhabitants. The University Hospital, under the control of the state, is equipped to accommodate 40 patients and furnishes free clinical material. Both hospital and dispensary clinics are offered and the sanatorium located in Boulder offers additional advantages in this line. The faculty embraces 15 professors and 10 lecturers and assistants, a total of 25. The laboratories are well equipped and commodious. A separate building is devoted to the study of anatomy and another one is used for medical work exclusively. A complete four-year course of study in a recognized high school, or its equivalent, is required for admission. This school is a member of the Association of American Medical Colleges. The work embraces a graded course of four years of nine months each. The tuition is $50 per year; there are no other fees. The Dean is Dr. Luman M. Griffin, Boulder. Total registration for 1900-1 was 70; graduates, 9. The twentieth session began Sept 9, 1901, and closes June 7, 1902.

CONNECTICUT.

Connecticut has a population of 908,420, and contains one medical college:

YALE MEDICAL SCHOOL.—This is the department of medicine of Yale University, and is located in New Haven, a good railroad and manufacturing town of 108,027 people. In 1810 a charter was granted for the establishment of this school, and in 1813 it was organized as The Medical Institution of Yale College. In 1879 a new charter changed the name to the one now used, and in 1884 the Connecticut Medical Society, which from the granting of the first charter had taken an active part in its control, released itself from a further responsibility and the University authorities assumed full control. The clinical advantages are embraced under the New Haven Hospital, which contains 150 beds and is the general hospital for New Haven; the Springside Hospital, which is connected with the city almshouse, and the State Hospital for the Insane, which, with its 1800 patients, offers an opportunity for special instruction in insanity in addition to the clinics. Besides these, the New Haven Dispensary, having a staff of 30 physicians, offers material for clinical teaching. The faculty embraces 11 professors, 4 lecturers, 12 instructors, and 16 assistants, a total of 43. The lecture rooms and laboratories are large and well equipped. Matriculants are admitted without examination, provided that they have received a degree in Arts or Sciences, that they present certificates showing that they have successfully prosecuted the subjects of the examination at some college, high school, academy, or preparatory school approved by the faculty, or that they have passed matriculation examinations, equivalent to those required, at some approved professional school. This school is a member of the Association of American Medical Colleges. The course covers a four-year graded curriculum, eight months constituting a school year; the first two years the fundamental branches are studied, the third year is devoted to a systematic teaching of medicine, surgery, obstetrics and pharmacology, and in the fourth year clinical work, with medicine, surgery and the specialties, is presented. The fees are $150 for each of the first three years, and $130 for the fourth year; in the first year there are additional fees amounting to $18, and in the second, $8. Board and lodging in New Haven can be obtained for $4.50 and upwards. The Dean is Dr. Herbert E. Smith, New Haven. During the session of 1900-1 there were 133 matriculants and 18 graduates. The eighty-eighth session opens October 4, 1901, and closes June 26, 1902.

DISTRICT OF COLUMBIA.

Washington, population 278,718, offers to the student of medicine many advantages. The Army Medical Museum, the Museum of Hygiene, the National Museum, together with the libraries in the Surgeon-General's Office, the Toner Medical Library and the Museum of Hygiene, in all over 125,000 volumes upon medicine, opens to the medical student a most profitable field. The clinical advantages offered by the various hospitals are good. Owing to the many boarding houses and hotels, board and lodging can be had at extremely reasonable rates. The medical schools are four, and are as follows:

MEDICAL SCHOOL OF COLUMBIAN UNIVERSITY.—This school was organized in 1821 as the Medical Department of Columbian College, which in 1873 became Columbian University. Besides University Hospital, under the immediate control of the faculty and giving the students of this school exclusive clinical advantages, the Garfield Hospital, the Children's Hospital, Central Dispensary and Emergency Hospital, the Providence Hospital, the Lutheran Eye and Ear Infirmary, the Episcopal, Columbia and the St. Elizabeth's Hospitals, all permit of abundant opportunity for clinics and clinical material. The faculty is composed of 29 professors, and 23 demonstrators and assistants, 52 in all. The candidates for matriculation are required to conform to the regulations of the Association of American Medical Colleges, of which this school is a member. The equipment and facilities for laboratory, didactic and clinical work are good. The completion of graded work covering the period of four years, eight months to the school year, is required; semi-annual examinations are held. Total fees for each year are $110. The Dean is Dr. E. A. de Schweinitz, 1325 H St. N. W., Washington. For the school year 1900-1 the total registration was 249; the graduates were 26. The eightieth session begins Oct. 7, 1901, and closes May 19, 1902.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE.—This is the medical department of Georgetown University and was organized in 1850. The Georgetown University Hospital is under the control of the School of Medicine and affords excellent facilities for clinical teaching and ward classes. Clinics are also held for the benefit of the students in Providence Hospital, containing 300 beds; in the Children's Hospital, the Central Dispensary and Emergency Hospital and the Garfield Hospital. Attendance upon clinical instruction is obligatory in the third and fourth years. The faculty contains 27 professors, and 22 instructors and assistants, a total of 49. The requirements for admission are those of the Association of American Medical Colleges, of which this school is a member. The building is conveniently located, and contains spacious and well-ventilated lecture rooms, laboratories and library; the laboratories are equipped with the most approved instruments and appliances. The complete course of study extends over four terms of eight months each. Examinations are held at the end of each session. The fees for the first year are $100; for the second, $105, and for the last two years, $100 each; a fee is charged for the material used in practical anatomy and operative surgery. The Dean is Dr. George M. Kober, 1600 T St., Washington. The total registration for the session 1900-1 was 123; graduates, 21. The next term opens Sept. 28, 1901, and ends May 31, 1902.

HOWARD UNIVERSITY MEDICAL DEPARTMENT.—Colored. This institution was organized in 1867 and "in conformity with the spirit of the organic law of the University, is open to all, without regard to sex or race, who are qualified by good moral character, proper age and suitable education." The removal of any racial distinction has been taken advantage of by colored students, so that it is devoted to them exclusively. The Freedmen's Hospital and Asylum is a general hospital of 300 beds and permits of the study of clinical cases among their own race. The faculty comprises 15 professors, and 10 lecturers and assistants, 25 in all. Matriculants are held to the requirements for admission prescribed by the Association of American Medical Colleges, to which this college belongs. The teaching has been in the past devoted to night classes, but the faculty announces that "it is probable that for the session of 1902-3 the first-year work will be day work almost altogether." Students are required to attend four courses of lectures in separate years of seven months each. The fees for each session are $80, plus $2 per part for dissecting material. Board can be had at the school dining hall for $9 a month, and a room in the dormitory for $15 a term. The Dean is Dr. Robert Reyburn, 714 13th St. N. W., Washington. Total registration for the year 1900-1 was 142; graduates, 19. The thirty-fourth session begins Oct. 1, 1901, and closes May, 1902.

NATIONAL UNIVERSITY MEDICAL DEPARTMENT.—This school was organized in 1884 and has a faculty made up of 30 professors, 1 assistant and 10 demonstrators, a total of 41. Clinical facilities are obtained at the Providence, Garfield and Episcopal Hospitals, the Eastern and Presbyterian Dispensaries and the Home for Incurables. Candidates for admission are held to the requirements laid down by the Association of American Medical Colleges, of which this school is a member. Instruction is given by lectures, recitations, clinical teaching and practical laboratory work. Oral examinations are held each week and final examinations, both oral

and written, at the end of each lecture term. The course consists of graded work for four years of eight months each. The total fees for each year are $100, except the first, when an additional fee of $5 is charged. The Dean is Dr. H. H. Barker, 1116 H St. N. W., Washington. Total registration for 1900-1 was 33; graduates, 11. The eighteenth session will begin Oct. 1, 1901, and will extend to May 3, 1902.

GEORGIA.

Georgia, population 2,216,331, has three medical colleges: Medical College of Georgia, located in Augusta; Atlanta College of Physicians and Surgeons, and Georgia College of Eclectic Medicine and Surgery, both in Atlanta.

Augusta.

MEDICAL COLLEGE OF GEORGIA.—This school was organized as a medical academy in 1829, and in 1873 was made the medical department of the University of Georgia, which relationship it still holds. It is situated in Augusta, a city of 39,441 inhabitants, and its faculty is made up of 15 professors, and 5 assistants, 20 in all. All students who entered on their first course after Sept. 30, 1900, must attend four sessions of six months each, those beginning previous to that time are compelled to take only three years' work, but in order to encourage these to take the additional year no tuition is charged them for the fourth year. Applicants for admission must, by examination, certificate or diploma, show that they possess an education equal to that required for second grade teachers in public schools; if they are deficient on examination, however, they are admitted and they may remove the condition any time before they appear for graduation. The City Hospital, with 130 beds; Lamar Hospital, with 80; the Polyclinic, and Hospital for Contagious Diseases supply clinical material. Total fees for first two years are $100 each; third year, $90, and $120 for the last year. Board and lodging can be procured for from $3 to $5 a week. The Dean is Dr. Eugene Foster, Augusta. Total enrolment for 1900-1 was 107; graduates, 30. The seventieth session opens October 1, 1901, and closes April, 1902.

Atlanta.

ATLANTA COLLEGE OF PHYSICIANS AND SURGEONS.—This school was formed in 1898 by the consolidation of the Atlanta Medical College, organized in 1854, with the Southern Medical College, organized in 1879. It is situated in Atlanta, an enterprising manufacturing city with a population of 89,872, and has a faculty composed of 14 professors and an adjunct faculty of 17, a total of 31. Clinical facilities are furnished by the Grady Hospital, which is the general hospital for Atlanta; clinics are free to the graduating class. First course students are required to "give satisfactory evidence to the faculty of such educational qualifications as will be deemed necessary for the successful prosecution of their medical studies. These requirements will be similar to those of other reputable medical colleges in the country." The course of study covers four years of six months each and is graded; the coming commencement, April, 1902, will graduate the last three-year students. The buildings are large and a new building for practical anatomy has just been added. Fees: Matriculation, paid once, $5; tuition, each year, $100, and $30 for graduation fee. Board and room can be obtained for from $3 to $4 per week. The Dean is Dr. W. S. Kendrick, 71 Washington St., Atlanta. Total registration of students for 1900-1 was 282; graduates, 67. Next session begins October 2, 1901, and closes April 4, 1902.

GEORGIA COLLEGE OF ECLECTIC MEDICINE AND SURGERY.—This was organized in 1886, and has a faculty of 11 professors and 1 demonstrator. The college dispensary and Grady Hospital furnish clinical material. Applicants for admission must adhere to the requirements established by the National Confederation of Eclectic Colleges, of which this college is a member. The curriculum covers four years of six months each. The Proctor is Dr. Elzie B. Thomas, Atlanta. Total number of students for 1900-1 was 55; graduates, 21. The next session opens Oct. 2, 1901, and closes April 1, 1902.

ILLINOIS.

Illinois, population 4,821,550, has sixteen medical colleges. They are all located in Chicago, a city with 1,698,575 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, Hahnemann Medical College, Bennett College of Eclectic Medicine and Surgery, Woman's Medical School, Chicago Homeopathic Medical College, College of Physicians and Surgeons, Hering Medical College, Jenner Medical College, Harvey Medical College, Illinois Medical College, Dunham Medical College, American Medical Missionary College, College of Medicine and Surgery, National Medical University and Chicago Eclectic College. Room and board can be obtained for from $2.50 a week upwards.

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 to 1898, and in the latter year became affiliated with the University of Chicago. The faculty is composed of 24 professors, 31 associate and assistant professors, and 59 instructors, assistants, etc., a total of 124. Good clinical facilities are furnished by Cook County Hospital, caring for about 20,000 patients yearly; Presbyterian Hospital, with 250 beds; a college dispensary, and an obstetric department. In addition to these, extra-mural clinical courses are offered at the West Side Hebrew Dispensary, St. Luke's Hospital, Illinois Charitable Eye and Ear Infirmary and Chicago Isolation Hospital. Bedside instruction is given. The requirements for admission are those of admission to the better universities or colleges. For the sessions of 1902 there will be required a certificate of admission to the second academic year of an accredited university, and for 1904-5 to the third year. By the addition of a recently completed, seven-story building, the facilities for clinical instructions are largely increased. The laboratories and their equipment are unexcelled. The curriculum covers graded work for four years of three quarters each, a quarter being three months. A continuous session is held, but credit for more than three quarters can not be obtained in any calendar year. A combined course for six years confers degrees of both Science and Medicine. All freshmen and sophomore studies are given at the University of Chicago. The total regular fees are $157 this year, but it is designed to gradually increase the fees to $200 per year. However, students in continuous attendance, i. e., three quarters in twelve months, may complete their course by paying the fees in vogue when they first enter the college. A matriculation fee of $5 is paid but once, and there are incidentals amounting to from $2 to $5 annually. The Dean is Dr. Frank Billings, 100 State St., Chicago. Total registration 1900-1 was 1055; graduates, 213. The fiscal year begins July 1; final examinations are held at the end of each quarter for those who have completed their work.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL.—This school was organized in 1859 as the medical department of Lind University, became independent as the Chicago Medical College in 1864, and in 1869 assumed its present relation as medical department of Northwestern University. The faculty comprises 30 professors, 10 associates and assistants, and 46 instructors, demonstrators, etc., in all 86. The newly completed Wesley Hospital, with 225 beds; Mercy Hospital, containing 400 beds; Provident Hospital, having 100 beds, and a college free dispensary furnish opportunities for clinical study to students of this college exclusively. St. Luke's, Cook County, and the Chicago Lying-in Hospitals are also open to them for study. Applicants for admission must, by diploma, certificate or examination, show possession of the educational acquirements required to enter the College of Liberal Arts of Northwestern University. This school is a member of the Association of American Medical Colleges. The laboratory and lecture-room facilities are ample and the equipment is good. The course of study covers graded work for four years of thirty-six weeks each. Final examinations are held at the end of each semester. The fees for each year are $135 and a matriculation fee of $5, paid once, is charged. The Dean is Dr. N. S. Davis, Jr., 65 Randolph St., Chicago. The total registration for 1900-1 was 344; graduates, 74. The next session opens Oct. 1, 1901, and closes June 19, 1902.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL.—Homeopathic. This was organized in 1851 and has a faculty of 19 professors and 30 associates, lecturers, etc., 49 in all. Hahnemann Hospital and a college dispensary supply clinical material. The requirements for admission are sufficient knowledge of English, arithmetic, geography, algebra, physics, United States history and Latin. A continuous course is held, in which the year is divided into three terms, two of which make up a school year. Four such years are necessary to cover the curriculum. Fees: Matriculation, paid once, $5; each term, $50, and hospital tickets, $5 each for third and fourth years. The Dean is Dr. E. Stillman Bailey, Marshall Field Bldg., Chicago. Total registration, 1900-1, was 175; graduates 51. The fall term began Sept. 9, 1901.

BENNETT COLLEGE OF ECLECTIC MEDICINE AND SURGERY.—Eclectic. This school was organized in 1868, and has a faculty of 25 professors and 4 assistants, 29 in all. Bennett Hospital, Cook County and Baptist Hospitals, and a college dispensary supply clinical facilities. Matriculants must present a diploma or "pass a satisfactory examination in conformity with the minimum requirements of the State Board of Health." The course covers four years of twenty-six weeks each. This school is a member of the National Confederation of Eclectic Medical Colleges. Fees for each year are $100, with a matriculation fee, paid once, of $5. The Dean is Dr. A. L. Clark, Elgin, Ill. Total registration, 1900-1, was 124; graduates, 37. The thirty-fourth session begins Sept. 24, 1901, and ends May 13, 1902.

NORTHWESTERN UNIVERSITY WOMAN'S MEDICAL SCHOOL.—This school was founded in 1870, and in 1892 became a department of the Northwestern University. The faculty is made up of 25 professors and 27 assistants, lecturers, etc., a total of 52. The clinical facilities are furnished by Cook County, Wesley and the Woman's Hospitals, the Illinois Charitable Eye and Ear Infirmary and a college dispensary. The requirements for admission are those of admission to Northwestern University College of Liberal Arts. This school is a member of the Association of American Medical Colleges. There is a continuous session, the year being divided into four terms of three months each; three terms constitute a college year, and at least forty-five months must elapse from matriculation to graduation. The fees are $100 each year, with a matriculation fee of $15 for the first year and a diploma fee of $10. The Dean is Dr. Eliza H. Root, Chicago. Total registration, 1900-1, was 72; graduates, 19. The fall session begins Oct. 1, 1901.

CHICAGO HOMEOPATHIC MEDICAL COLLEGE.—Homeopathic. This was organized in 1876, and has a faculty of 21 professors and 46 adjuncts, lecturers, etc., a total of 67. The Chicago Homeopathic and Cook County Hospitals, together with a college dispensary, furnish clinical material. Applicants for admission must show by certificate or examination a sufficient knowledge of English, arithmetic, algebra, physics, United States history, geography, botany, and Latin equivalent to a year's study. The course covers four years of seven months each. Total fees are about $110 for each year. The acting Dean is Dr. A. C. Cowperthwaite, Marshall Field Bldg., Chicago. Total registration, 1900-1, was 152; graduates, 48. The next session opens Sept. 24, 1901, and ends April 22, 1902.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1882 and in 1896 became the medical department of the University of Illinois. The faculty is composed of 39 professors, 38 adjuncts and clinical professors and 38 instructors, etc., a total of 115. The West Side Hospital, containing 125 beds: Cook County Hospital, and a college dispensary and maternity clinic supply most of the clinical material, but under certain conditions students of this school are admitted to the following hospitals for clinical study: Augustana, Baptist, Chicago, Woman's, Samaritan and Alexian Brothers' Hospitals, and the Illinois Eye and Ear Infirmary. Applicants for admission must conform to the requirements prescribed by the Association of American Medical Colleges, of which this school is a member. A magnificent building has recently been added to the college, and the laboratory, amphitheater and lecture-room space and equipment is good. A continuous session is held and the calendar year is divided into three terms of sixteen weeks each. Two terms constitute a collegiate year and credit

for more than that amount of work can not be obtained in any calendar year, except with the permission of the Dean. Four collegiate years are necessary for graduation. The fees are $130 each for the first two years, $115 for the third, and $125 for the fourth year. The Dean is Dr. William E. Quine, 103 State St., Chicago. Total registration for 1900-1 was 676; graduates, 164. The next fall term begins Oct. 1, 1901.

HERING MEDICAL COLLEGE.—Homeopathic. This school was organized in 1892. The faculty comprises 23 professors and 13 associates, lecturers, etc., in all 36. Hering College Hospital, National Temperance and Cook County Hospitals supply clinical facilities. The course covers four years of seven months each. The total fees for a full course are $300 The Dean is Dr. H. C. Allen, 5142 Washington Ave., Chicago. Total registration for 1900-1 was 60; graduates, 12. The tenth session begins Oct. 1, 1901, and ends April 11, 1902.

JENNER MEDICAL COLLEGE.—This is an evening school, organized in 1892. The faculty consists of 24 professors and 8 assistants, 32 in all. Cook County Hospital and college dispensary supply clinical material. This college conforms to the requirements of the Association of American Medical Colleges. The course covers four years of forty-two weeks each and embraces laboratory, didactic and clinical instruction. The total fees each year are $100, with a $5 matriculation fee, paid but once. The Secretary is Dr. Stuart Johnstone, 34 Washington St., Chicago. Total enrolment for 1900-1 was 101; graduates, 13. The next session begins Sept. 2, 1901, and ends June 19, 1902.

HARVEY MEDICAL COLLEGE.—This is a night school and was organized in 1894. The faculty comprises 39 professors and 8 assistants, demonstrators, etc., 47 in all. The college dispensary, having departments for both indoor and outdoor patients, where one evening clinic a week is held, furnish most of the material for clinical study. The requirements for admission are those of the Association of American Medical Colleges. The course covers four years of ten months each. Total fees for the first three years are about $130 each, and for the fourth year $150. The Secretary is Dr. J. Chase Stubbs, Chicago. Total registration for 1900-1 was 270; graduates, 17. The eighth session opened Sept. 2, 1901, and closes June 28, 1902.

ILLINOIS MEDICAL COLLEGE.—This school was organized in 1894 and has a faculty made up of 24 professors and 15 assistants, associates, etc., a total of 39. A college dispensary and Cook County Hospital are available for clinical study. The requirements for admission are based on those of the Association of American Medical Colleges. A continuous course consisting of four terms to the calendar year is offered, two terms of three months each constituting a college year. Four collegiate years are necessary for graduation, and forty-two months must elapse between that time and matriculation. Total fees are about $75 for each year. The Dean is Dr. B. B. Eads, Chicago. Total registration for 1900-1 was 202; graduates, 36. The next fall term begins Oct. 1, 1901.

DUNHAM MEDICAL COLLEGE.—Homeopathic. This was organized in 1895 and has a faculty of 31 professors and 8 associates and lecturers, in all 39. Cook County Hospital, Garfield Park Sanitarium, St. Anthony's Hospital and a college dispensary supply the clinical facilities. Four years' work of seven months each is required for graduation. The fees are about $110 for each year. The Dean is Dr. James T. Kent, 92 State St., Chicago. Total registration for 1900-1 was 122; graduates, 18. The eleventh session begins Sept. 24, 1901, and ends April 29, 1902.

AMERICAN MEDICAL MISSIONARY COLLEGE.—This school was organized in 1895, and has the primal object of educating men and women to act as missionaries and emphasize their religious teachings through their ability to heal the body. The faculty comprises a total of 21 teachers. The didactics and laboratory work, covering the first two years, is carried on at Battle Creek, Mich., and the clinical studies in Chicago. A hospital with 20 beds, in connection with the college, together with a college dispensary, containing an obstetric department, supply material for practical work. The requirements are based upon those of the Association of American Medical Colleges. The course covers four years of nine months each. Total fees are $120 for each of the four years. The Secretary is Dr. E. L. Eggleston, Battle Creek, Mich. Total registration for 1900-1 was 119; graduates, 13. The seventh session opens Sept. 25, 1901, and closes June 24, 1902.

COLLEGE OF MEDICINE AND SURGERY.—Physio-Medical. This school was organized in 1896 and has a faculty of 31 teachers. A college dispensary supplies material for clinical work. The course covers four years of seven months each. Fees for the first year, $100; for the second and third, $95 each, and $110 for the fourth. The Dean is Dr. H. P. Nelson, 631 Jackson Blvd., Chicago. Total registration for 1900-1 was 46; graduates, 9. The next session begins Sept. 26, 1901, and ends April 26, 1902.

NATIONAL MEDICAL UNIVERSITY.—This was organized in 1889, and from the catalogue it seems to grant any degree desired, whether medical, dental or osteopathic, and to offer instruction at any time, whether day or night, summer or winter. A teaching force of 61 is shown, and it claims to require of applicants for admission the equivalent of a standard high school education. A four-year course of thirty-nine weeks each is claimed to be necessary for graduation. The total fees are $100 for each year, but "when the fee—$300 for the entire osteopathic course is paid in advance, the student may take the entire medical course and obtain the degree, Doctor of Medicine, without any further charge." Its degrees are recognized by the Illinois State Board of Health. Total matriculants for 1900-1 were 144; graduates in March were 6, and in June 6, a total of 12.

CHICAGO ECLECTIC COLLEGE.—The first session of this school will begin September 17. It has not yet been recognized by the Illinois State Board of Health.

INDIANA.

Indiana, population 2,516,462, has five medical colleges. Four are situated in Indianapolis, with 169,164 people: The Physio-Medical College, Central Medical College of Indiana, Central College of Physicians and Surgeons, and the Eclectic Medical College. The clinical facilities of Indianapolis are good and board and lodging can be obtained from $2.50 a week upwards.

The Fort Wayne College of Medicine is situated in Fort Wayne, a railroad and manufacturing town of 45,115 inhabitants. Board and room can be obtained there at an average of $3 a week.

Indianapolis.

PHYSIO-MEDICAL COLLEGE.—This school was organized in 1873 and has a teaching force of 29. The course has been lengthened to four years of 26 weeks each, beginning with this school year. Total fees for the four years are $65 each. The Secretary is Dr. C. T. Bedford, Indianapolis. Total enrolment, 1900-1, was 34; graduates, 9. The next session begins Oct. 1, 1901, and closes April 2, 1902.

MEDICAL COLLEGE OF INDIANA.—This is the medical department of the University of Indianapolis and was organized in 1878. The faculty embraces 25 professors and 32 adjuncts, lecturers, etc., a total of 57. The City Hospital, containing 200 beds; Indianapolis Dispensary, Central Hospital for the Insane, with a capacity for 1800 patients; St. Vincent's and the Maternity Hospitals, and a college dispensary provide clinical facilities; the wards in the charity hospitals are open to students of this college for bedside instruction. The laboratory and lecture-room space is ample. This college is a member of the Association of American Medical Colleges and the requirements for admission are those of that organization. The course extends over four years of seven months each. Fees: First and second years, $80 each; third, $75, and $100 for the fourth year. The Dean is Dr. Henry Jameson, 28 E. Ohio St., Indianapolis. Total enrolment for 1900-1 was 253; graduates, 46. The thirty-second session opens September 24, 1901, and closes April 24, 1902.

CENTRAL COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1879, and has a faculty of 22 professors, and 21 lecturers, demonstrators, etc., 43 in all. The City Hospital, Central Hospital for the Insane, City Dispensary, and a college dispensary supply material for clinical teaching. Applicants for admission must show educational requirements prescribed by the Association of American Medical Colleges, of which the school is a member. Instruction is by means of laboratory, didactic and clinical teaching, and the equipment is ample. The course of study covers four years of six months each. Fees: First year, $100; second, $110; third, $50, and $75 for the fourth year. The Dean is Dr. Samuel E. Earp, Indianapolis. Total registration for 1900-1 was 87; graduates, 23. The present session opened September 20, 1901.

ECLECTIC MEDICAL COLLEGE.—Eclectic. This school was organized two years ago and claims a teaching force of 22. The requirements for admission claimed are those of the National Confederation of Eclectic Medical Colleges. The catalogue shows a four-year course of six months each. A total of 14 students matriculated for 1900-1.

Fort Wayne.

FORT WAYNE COLLEGE OF MEDICINE.—This school was organized in 1879 and has a faculty of 24 professors, and 7 lecturers and assistants, a total of 31. St. Joseph's Hospital, with a capacity of 350 patients; Hope Hospital, with 200 beds; St. Roche's Hospital, having accommodation for 35 patients; Indiana School for Feeble-Minded Youth and Allen County Orphan Asylum, capable of holding 150 children, supply the clinical facilities. This school is a member of the Association of American Medical Colleges and the requirements and rules are those of the Association. The curriculum covers four years of six months each. The course is practical, supplemented by lectures and laboratory work. The total fees for each year are $75, with an additional $5 matriculation fee, payable once. The Dean is Dr. C. B. Stemen, 25 Broadway, Fort Wayne. Total number of students registered 1900-1 was 35; graduates, 4. The present session opened September 11, 1901, and closes March 25, 1902.

IOWA.

Iowa, population 2,231,853, contains five medical colleges. They are: College of Medicine of the State University of Iowa, College of Homeopathic Medicine of the State University of Iowa, Iowa College of Physicians and Surgeons, Sioux City College of Medicine, and Keokuk Medical College, College of Physicians and Surgeons.

Iowa City.

COLLEGE OF MEDICINE OF THE STATE UNIVERSITY OF IOWA.—This is situated in Iowa City, population 7987, and was organized as the Medical Department of the State University in 1870. The faculty is made up of 14 professors, 7 lecturers, and 10 demonstrators and assistants, a total of 31. The University Hospital, built in 1897 at a cost of $50,000, contains separate surgical, gynecological, medical, ophthalmological and laryngological operating rooms and furnisnes good clinical material. A well-equipped hospital also supplies clinical material. Applicants for admission must conform to the requirements of the Association of American Medical Colleges, of which this college is a member. The course of study covers four years of thirty-six weeks each, embracing graded laboratory, didactic and clinical work. Combined courses leading to more than one degree are offered. Total fees for each year is $65. Board and lodging costs from $2.50 to $5 per week. The Dean is Dr. William D. Middleton, Iowa City. Total number of students registered for 1900-1 was 272; graduates, 35. The thirty-second course of lectures opened September 19, and will end June 12, 1902.

COLLEGE OF HOMEOPATHIC MEDICINE OF THE STATE UNIVERSITY OF IOWA.—This is a department of the State University and was organized in 1877. The faculty is composed of 10 professors, and 9 lecturers and assistants, a total of 19, but some of these are of

the faculty of the College of Medicine. The requirements for admission, and the work, with the exception of that pertaining to homeopathy, are the same as those for the other department. The fees are also the same. The Dean is Dr. Gorge Royal, Iowa City. Total registration for 1900-1 was 59; graduates, 16. The twenty-fifth session began September 19, and will end June 12, 1902.

Des Moines.

THE IOWA COLLEGE OF PHYSICIANS AND SURGEONS.—This is the Medical Department of Drake University and is located in Des Moines, a city of 62,139 inhabitants. It was organized in 1882. The faculty contains 17 professors and 6 assistants, a total of 23. Mercy Hospital furnishes clinical material and attendance upon clinics is required the same as upon lectures. The requirements for admission are those determined by the Association of American Medical Colleges, to which this school belongs. Instruction is given by means of lectures, recitations, demonstrations, laboratory work and hospital clinics. The work covers a graded course of four years, of nine months each. Board and lodging can be obtained for $15 a month. The total fees for the first two years are $80 each, and for the last two years, $75 each. The Dean is Dr. Lewis Schooler, Des Moines. The total registration for the year 1900-1 was 78; graduates, 14. The twentieth session began September 18, and will end June 13, 1902.

Sioux City.

SIOUX CITY COLLEGE OF MEDICINE.—This is located in Sioux City, population 33,111, and was organized in 1891. The faculty is made up of 14 professors and 1 demonstrator, 15 in all. Clinical material is supplied by St. Joseph's, Mercy and Samaritan Hospitals, and a college dispensary. The requirements for admission are those of the Association of American Medical Colleges, of which this college is a member. The system of study embraces a four-year graded course, eight months being a school year. Final examinations are held at the close of each course of instruction. Matriculation fee, paid but once, $5; tuition, each year, $48; hospital fee, $5, and graduating fee, $20. The Dean is Dr. H. A. Wheeler, Sioux City. Total number of students registered 1900-1 was 52; graduates, 5. The twelfth session opened September 10, and will close April 30, 1902.

Keokuk.

KEOKUK MEDICAL COLLEGE, COLLEGE OF PHYSICIANS AND SURGEONS.—In 1849 the College of Physicians and Surgeons, Keokuk, was organized and four years later it became the Medical Department of the University of Iowa, continuing as such until 1870, when the original name was resumed. By the union, in 1899, of this college with the Keokuk Medical College, organized in 1890, the present school under the above name was founded. Situated in Keokuk, a town of 14,641 people, and drawing much from the surrounding country, the clinical material is good. St. Joseph's Hospital, under the charge of the Sisters of St. Francis, is open to the student for study and the clinics held there are large and varied. The faculty is composed of 17 professors and 1 demonstrator, 18 in all. This college is a member of the Association of American Medical Colleges and the requirements for admission are those of that organization. The studies embrace a graded course of four years, seven months to the year. Board and room can be secured for from $2 to $4 per week. The total fees for the first year are $63; for the second and third, $58 each, and $53 for the last year. The Secretary is Dr. Oliver D. Walker, Keokuk. Total registration for 1900-1 was 247; graduates, 51. The next session begins October 1, 1901, and ends April, 1902.

KANSAS.

Kansas, population 1,470,495, has three medical colleges, as follows: School of Medicine of the University of Kansas, located in Lawrence; Kansas Medical College in Topeka, and the College of Physicians and Surgeons, situated in Kansas City.

Lawrence.

SCHOOL OF MEDICINE OF THE UNIVERSITY OF KANSAS.—This school does not confer the degree of Doctor of Medicine. It is situated in Lawrence, a town with 10,862 inhabitants, and was organized in 1880 as a department of the University of Kansas. The faculty is composed of 4 professors, 7 associates and assistants, and 7 lecturers, demonstrators, etc., a total of 18. This school is a member of the Association of American Medical Colleges and the requirements for admission are those of that Association. Only the purely scientific subjects are taught, but the work in these is thorough, seventy-two weeks being devoted to the two-year course. The greater part of the work is in the laboratory, with recitations and assigned readings, the lectures being supplementary only. For this reason the equipment and arrangement of the laboratories have been given special attention. A combined course of four years is offered, conferring the degree of Bachelor of Arts in Medicine. The total fees to residents of the state are: For the first year, $60, and for the second, $30; non-residents of the state are required to pay $25 additional for each year. The average cost of board and lodging is $3.75 a week. The Dean is Dr. S. W. Williston, Lawrence. The number of students registered for 1900-1 was 47. The present session began September 11, and will end June 11, 1902.

Topeka.

KANSAS MEDICAL COLLEGE.—This college was organized in 1890 and is situated in Topeka, population 33,608. Its faculty is composed of 27 professors and 6 lecturers and assistants, 33 in all. Good material for both medical and surgical clinics is found in Christ's Hospital, with 100 beds; Riverside Hospital and Dispensary, and Topeka State Hospital; the dispensary at the college also supplies material for class demonstration. The requirements for admission are those prescribed by the Association of American Medical Colleges, of which this school is a member. The college building affords ample laboratory and lecture-room space. The course of study is a graded one covering four years of twenty-six weeks each. Individual instruction is especially aimed at. The total fees for the first two years are $70 each, and $68 each for the last two years. The cost of board and room varies from $2.50 to $4 a week. The Dean is Dr. John E. Minney, Topeka. The total registration for 1900-1 was 98; owing to the change from a three to a four-year course there was no graduating class in 1901. The twelfth session began September 10, and will close March 21, 1902.

Kansas City.

COLLEGE OF PHYSICIANS AND SURGEONS.—This was organized in 1894 as the Medical Department of Kansas City University, and is situated in Kansas City, a city with a population of 51,418. The faculty is made up of 29 professors, 3 lecturers, and 5 demonstrators and assistants, a total of 37. Bethany Hospital, with 60 beds; St. Margaret's Hospital, a college dispensary, and an outdoor obstetric department supplies clinical material. Practical demonstration and bedside teaching is emphasized in the work. It is claimed that the requirements for admission are in accordance with the rules of the Association of American Medical Colleges, but this college is not a member. The course of study is a graded one of four years, seven months each. A scholarship is offered for $175, but taken separately the total fees for the first three years are $60 each, and for the fourth year, $50; a matriculation fee of $5, payable but once, is charged. The Dean is Dr. J. W. May, Topeka. The total registration of students for 1900-1 was 87; graduates, 31. The eighth session opened September 3, 1901, and will close March 26, 1902.

KENTUCKY.

Kentucky, population 2,147,174, has eight medical colleges. They are all situated in Louisville, a growing city of 204,731 inhabitants, and are as follows: University of Louisville Medical Department, Kentucky School of Medicine and Hospital, Louisville Medical College, Hospital College of Medicine, Southwestern Homeopathic Medical College, Kentucky University Medical Department, Louisville National Medical College, and Medical Department of State University. Board and lodging can be obtained in Louisville from $2.50 to $4 per week.

Louisville.

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT.—This school was organized in 1837, under the name, Louisville Medical Institute, and in 1846 it assumed its present title. It has a faculty of 8 professors, 3 clinical professors, 26 lecturers, demonstrators, etc., a total of 37. The University Hospital, City Hospital, St. Mary's and St. Elizabeth's Hospitals, together with the college dispensary, furnish good clinical material. Applicants for admission must show that they possess the educational requirements held by the Association of American Medical Colleges, of which this school is a member. The course covers graded work for four years of six months each. Total fees: First year, $107; second, $122; third, $105, and fourth, $112. The Dean is Dr. J. M. Bodine, Louisville. Total registration for 1900-1 was 157; graduates, 35. The sixty-fifth session begins Sept. 23, 1901, and ends March 31, 1902.

KENTUCKY SCHOOL OF MEDICINE AND HOSPITAL.—This school was organized in 1850, and has a faculty composed of 10 professors, 10 lecturers and 16 instructors and assistants, a total of 36. The College Hospital, City Hospital and the college dispensary furnish the facilities for clinical study. The student is brought directly into contact with the patient through dispensary and bedside work by dividing the classes into sections. This college is a member of the Association of American Medical Colleges, and the requirements for admission are those of that organization. The laboratories and their equipment are good. The curriculum embraces a four years' course of six months each. The fees for the first two years are $110 each; for the third year, $90, and $80 for the fourth year. The Dean is Dr. W. H. Wathen, 658 Fourth Ave., Louisville. Total number of students registered for 1900-1 was 309; graduates, 43. The next session begins Jan. 2, 1902, and will end July 1, 1902.

LOUISVILLE MEDICAL COLLEGE.—This school was organized in 1869 and has a faculty of 10 professors and 13 instructors and assistants, 23 in all. The City Hospital, College Infirmary and a dispensary offer good clinical facilities. Applicants for admission must show by diploma, certificate or examination that they are sufficiently proficient in English, arithmetic, algebra, physics and such Latin as would be acquired in one year's study. The laboratories and lecture rooms are ample. The course of study covers four years of six months each. The total fees for each year are $100. The Dean is Dr. C. W. Kelly, Louisville. Total registration of students for 1900-1 was 196; graduates, 35. The next session opens Sept. 16, 1901, and closes March, 1902.

HOSPITAL COLLEGE OF MEDICINE.—This school is the medical department of the Central University of Kentucky and was organized in 1873. The faculty is composed of 9 professors, 9 adjuncts and 23 lecturers, demonstrators, etc., a total of 41. The Gray Street Infirmary, City Hospital and a well-equipped college dispensary present good facilities for clinical study. The requirements for admission are those of the Association of American Medical Colleges. Laboratory work, which is a prominent feature of the course, is thorough and practical. The laboratories and amphitheaters are ample in equipment and capacity, and the hospital advantages give opportunity for personal bedside instruction. The course covers four years of six months each. Total fees for each of first two years, $120; for the third year, $85, and $125 for the fourth year. The Dean is Dr. P. Richard Taylor, Louisville. Total enrolment for 1900-1 was 347; graduates, 52. The twenty-eighth session opens Jan. 1, 1902, and closes June 27, 1902.

SOUTHWESTERN HOMEOPATHIC MEDICAL COLLEGE.—Homeopathic. This college was organized in 1893 and has a faculty of 18 professors and 13 lecturers and assistants, 31 in all. A college dispensary supplies clinical material. The curriculum covers four years of seven months each. Total fees: First year, $85; second, $80; third, $170, and $65 for the fourth year. The Dean is Dr. A. L. Monroe, Louisville. Total number of students for 1900-1 was 33; graduates, 11. Next session opens Oct. 1, 1901, and closes April 29, 1902.

KENTUCKY UNIVERSITY MEDICAL DEPARTMENT.—This school was organized in 1898 and is the medical department of the Kentucky

University. The faculty is composed of 13 professors, 22 lecturers, demonstrators, etc., 35 in all. Broadway Infirmary, the City Hospital, and a college dispensary furnish clinical material. The requirements for admission are those of the Association of American Medical Colleges, this school being a member of that organization. The buildings provide ample facilities for clinical, laboratory and didactic instruction. The course of study embraces graded work of four years of at least twenty-five weeks each. Total fees: First year, $120; second, $110; third, $95, and $115 for the fourth year. The Dean is Dr. Thomas C. Evans, 419 W. Chestnut St., Louisville. Total number of students registered in 1900-1 was 204; graduates, 20. The next session opens Jan. 1, 1902, and closes June 26, 1902.

MEDICAL DEPARTMENT OF STATE UNIVERSITY.—This is a school for colored students organized in 1899. The faculty has 8 professors. The catalogue claims a four-year course of six months each. Total matriculants for 1900-1 were 12.

LOUISVILLE NATIONAL MEDICAL COLLEGE.—Colored. This was chartered in 1888 and shows a teaching force of 15. The catalogue claims a four-year course, six months to the year; the total fees are about $44 for each year. Total enrolment for 1900-1 was 21; graduates, 4.

LOUISIANA.

Louisiana, having a population of 1,381,625, contains two medical colleges: Medical Department of the Tulane University of Louisiana and New Orleans University. They are both situated in New Orleans, a city of 287,104 people. The cost of room and board is from $10 to $22 a month.

MEDICAL DEPARTMENT OF THE TULANE UNIVERSITY OF LOUISIANA. This school was organized in 1834 as the Medical College of Louisiana, and in 1884 it was incorporated under its present name, but remained the medical department of the State University. The faculty embraces 7 professors, and 17 lecturers, instructors, etc., 24 in all. By acts of legislature the Charity Hospital, with its 900 beds, has been opened to the students of this school for clinical study not only in medicine and surgery, but also in obstetrics and gynecology. In the year 1900 there were 8301 cases treated in the wards of this hospital; these were indoor patients, and, in addition to these, 19,058 outdoor patients were treated in the free dispensary, a department of the hospital. The Milliken Memorial Hospital, with a capacity for 200 children, is also available for study of clinical cases. Bedside instruction is given by the attending physicians to these hospitals, and postmortem examinations are held before the students. This college is a member of the Southern Medical College Association and its requirements for admission are those of that organization. The laboratories are large and well equipped, and the lecture and recitation rooms are ample. The course of study covers four years of six months each. Total fees for the first two years are $135 each, and for the third and fourth, $145 and $165, respectively. The Dean is Dr. Stanford E. Chaille, New Orleans. Total number of students registered for 1900-1 was 390; graduates, 114. The sixty-seventh session begins October 31, 1901, and will close April 30, 1902.

MEDICAL COLLEGE OF NEW ORLEANS UNIVERSITY.—Colored. This school was organized in 1889 as the Medical Department of New Orleans University. It is devoted to the education of negro students. The faculty is made up of 6 professors and 3 instructors, 9 in all. Clinical material is supplied by the Sarah Goodridge Hospital and by an outdoor clinic. The rules for admission are those of the Association of American Medical Colleges, of which this college is a member. The curriculum covers a graded course of four years, twenty-six weeks each. The laboratories and lecture rooms are ample. Examinations are held monthly. Total fees for the first year are $34; for the second, $37.50; third, $36.50, and $40 for the last year. The Dean is Dr. H. J. Clements, New Orleans. Total enrolment for 1900-1 was 32; graduates, 2. The thirteenth college year began September 3, and will end March 3, 1902.

MAINE.

Maine, population 694,466, has one medical college:

MEDICAL SCHOOL OF MAINE.—This is the Medical Department of Bowdoin College and is situated in Brunswick, a town with 5210 inhabitants; it was organized in 1820. The faculty is composed of 13 professors and 5 assistants, 18 in all. The clinical facilities are supplied by the Maine General Hospital. Applicants for admission, unless they possess a diploma, are examined in English, arithmetic, algebra, geometry, United States history, physics, chemistry and Latin. The course covers four years of twenty-six weeks each. The total fees are $120 for the first year; for the second and the third, $110, and $130 for the fourth year. Board and lodging cost from $3 to $5 a week. The Dean is Dr. Alfred Mitchell, Brunswick. Total number of students enrolled for 1900-1 was 90; graduates, 40. The next session opens December 26, 1901, and closes June 26, 1902.

MARYLAND.

Maryland, with a population of 1,188,044, contains eight medical colleges. They are all located in Baltimore, a city with 508,957 inhabitants, and they are as follows: School of Medicine of the University of Maryland, College of Physicians and Surgeons, Baltimore University School of Medicine, Baltimore Medical College, Woman's Medical College, Southern Homeopathic Medical College, Johns Hopkins Medical School, and Maryland Medical College. The Bay View Hospital, having a capacity for 2,000 patients, is open to students for clinical instruction, and furnishes good opportunities for practical demonstrations. Board and lodging can be obtained for from $3 to $3 per week.

SCHOOL OF MEDICINE OF THE UNIVERSITY OF MARYLAND.—This institution was organized in 1807 as the College of Medicine of Maryland, and in 1812, other faculties having been added, the whole was chartered under the name of the University of Maryland. The faculty is composed of 14 professors, 21 clinical and associate professors, and 24 lecturers, demonstrators, etc., a total of 59. The University Hospital, a part of which is used for a hospital for foreign seamen and another portion for a free city hospital, offers excellent clinical facilities. Besides this, the Presbyterian Eye, Ear and Throat Charity Hospital, in which 10,734 patients were treated in 1900; the Hospital for the Relief of Crippled and Deformed Children, containing 40 beds; the Maternity Hospital, and a college dispensary furnish material for clinical study. This school is a member of the Association of American Medical Colleges, and its requirements for matriculation are those specified by that Association. The laboratories and lecture rooms are ample and well equipped. The fourth-year class, divided into sections, receives special training in practical laboratory work in a well-appointed clinical laboratory. Didactic, laboratory and clinical instructions, special attention being paid to bedside work, make up the system of teaching. The course covers four years of seven months each, and is graded. The total fees for the first two years are $120 each; for the third year, $110, and $140 for the final year. The Dean is Dr. R. Dorsey Coale, Baltimore. The total number of students registered in 1900-1 was 332; graduates, 71. The ninety-fifth session begins Oct. 1, 1901, and will terminate May 1, 1902.

COLLEGE OF PHYSICIANS AND SURGEONS, BALTIMORE.—This school was organized in 1872, and in 1878 Washington University School of Medicine, established in 1827, was consolidated with it. The faculty embraces 16 professors, 18 associate and clinical professors, and 18 demonstrators and assistants, a total of 52. The clinical facilities, besides those afforded in common with other schools, are supplied by the Baltimore City Hospital, the Hospital for the Colored Race, containing 100 beds; the Nursery and Child's Hospital, with 150 beds; the Maryland Lying-in Asylum, and a college dispensary. The requirements for admission are those established by the Association of American Medical Colleges, of which this school is a member. The work covers a graded course of four years, seven months constituting a year. The laboratories are well lighted and supplied with complete equipment; one important addition is the clinical laboratory for practical work. A skiascopic laboratory is also a recent addition and instructs the students in the use of the *x*-ray apparatus. Total fees for the first three years are $115 each, and $135 for the last year. The Dean is Dr. Thomas Opie, Baltimore. The total number of students registered in 1900-1 was 359, of which number 59 were graduates. The next session opens Oct. 1, 1901, and closes April 15, 1902.

BALTIMORE MEDICAL COLLEGE.—This college was organized in 1881, and has a faculty made up of 26 professors, 5 lecturers, 3 associates and 11 demonstrators and assistants, 45 in all. The clinical material is furnished by the Maryland General Hospital, having a capacity of 200 beds; the Maryland Lying-in Hospital, in which 171 deliveries took place in 1900; the Mount Hope Retreat, which presents good opportunity for the study of nervous and mental diseases, and a college dispensary, which, besides the great number of ambulatory patients treated, has an outdoor department that permits of the advanced student taking care of charity cases and carrying out his own treatment. Requirements for admission are those of the Association of American Medical Colleges, to which this college belongs. The college buildings afford ample laboratory, clinical and lecture-room space. Bedside teaching in the hospital wards is carried on in sections and every member of the senior class is required to attend throughout the session. The course of study is graded and covers four years of seven months each. The Dean is Dr. David Streett, Baltimore. The total number of students registered in 1900-1 was 507; graduates, 97. The twenty-first session opens Sept. 26, 1901, and closes April 19, 1901.

WOMAN'S MEDICAL COLLEGE.—This school was organized in 1882 and has a faculty of 14 professors, 5 adjunct professors, and 9 assistants and lecturers, a total of 28. The Hospital of the Woman's Medical College, Presbyterian Eye, Ear and Throat Charity Hospital, St. Mary's Asylum and a college dispensary furnish clinical material. The college is a member of the Association of American Medical Colleges, and applicants for admission are controlled by the rules of that organization. The laboratories and lecture rooms are equipped with all necessary apparatus; the practical work is emphasized. Eight months constitute a school year, and the course covers graded work for four years. The total fees for the first three years are $105 each, and $85 for the last year. Total number registered for 1900-1 was 31; graduates, 7. The twentieth session opens Oct. 1, 1901, and closes June 5, 1902.

BALTIMORE UNIVERSITY SCHOOL OF MEDICINE.—This school was organized in 1884, and has a faculty made up of 12 professors, and 11 lecturers, demonstrators, etc., in all 28. The Baltimore University Hospital, Lying-in Hospital and the clinical material used in common with the other schools, supply the facilities for practical work. In the hospital wards the student is given bedside instruction, and in surgical clinics the students act as assistants in the operations, and are taught to administer anesthetics. The requirements for admission are those of the Association of American Medical Colleges, of which this college is a member. The college dispensary affords much clinical material and the students, under the direction of the physician in charge, make calls and treat patients at their homes. The lecture rooms and laboratories are ample, and the course of instruction, which consists of graded work for four years of six months each, is practical. The total fees for the first two years are $100 each; for the third year, $80, and $110 for the fourth year. The Dean is Dr. Hampson H. Biedler, 119 W. Saratoga St., Baltimore. Total registration for year 1900-1 was 66; graduates, 31. The eighteenth session opens October 1, 1901, and closes April 15, 1902.

SOUTHERN HOMEOPATHIC MEDICAL COLLEGE.—Homeopathic. This school was organized in 1890, and has a faculty of 13 professors, 3 associate professors, and 23 lecturers and demonstrators, a total of 39. The clinical facilities are those offered by the Maryland Homeopathic Hospital, which has 55 beds, and the dispensary; the obstetric department also furnishes clinical material. Applicants for matriculation must pass a satisfactory examination in English, arithmetic, geography, history, and Latin, unless they possess satisfactory evidence that they have done a corresponding amount of work. The course covers graded work for four years,

seven months to the year. The fees are $105 for the first year, $100 each for the second and third, and $130 for the last year. The Dean is Dr. George T. Shower, 421 Roland Ave., Baltimore. Total registration 1900-1 was 32; graduates, 10. The eleventh session begins September 30, 1901, and ends May 7, 1902.

JOHNS HOPKINS MEDICAL SCHOOL.—This is the medical department of Johns Hopkins University and was organized in 1893. The faculty comprises 11 professors, 14 clinical and associate professors, 14 lecturers and associates, and 25 instructors and assistants, a total of 64. The Johns Hopkins Hospital and Dispensary furnishes abundant and varied clinical material; the lying-in department of the hospital, opened in 1896, is in successful operation. The requirements for admission demand that the applicant either has, (a) completed the chemical-biologic course which leads to the A. B. degree in the University; (b) graduated at an approved college or scientific school, and can furnish evidence of an acquaintance with Latin and a fair reading knowledge of French and German, and such knowledge of physics, chemistry and biology as above indicated. If the candidate is unable to show this, he must pass a satisfactory examination covering this ground. This school is a member of the Association of American Medical Colleges. The anatomic, physiologic, pathologic and clinical laboratories are large, well lighted and well equipped. The buildings are ample and built expressly for the purpose for which they are used. In the method of instruction special emphasis is laid upon practical work in the laboratories, dispensary and in the wards of the hospital. The first two years is devoted to practical work in the laboratories, combined with demonstrations, recitations and lectures, and during the remainder of the course opportunity for the personal study of cases is given. The work covers a graded course of four years, eight months to the year. Final examinations, partly written and partly oral, include practical tests in laboratory and clinical work; the general character of the student's work is closely watched. The charge for tuition is $200 per annum, with no fees unless a microscope is rented: that fee is $5 a year. The Dean is Dr. William H. Howell, 232 W. Lanvale St., Baltimore. Total registration in 1900-1 was 209: graduates, 54. The ninth session begins October 1, 1901, and ends June 15, 1902.

MARYLAND MEDICAL COLLEGE.—This school was organized in 1898, and has a faculty of 14 professors, and 11 associates, lecturers, etc., 25 in all. The Franklin Square Hospital and a college dispensary furnish clinical material. The course of study covers three years of eight months each, but after October, 1902, all students matriculating will be compelled to take a four-year course. A matriculation fee of $5 and total laboratory fees for the three years of $45 is charged; the tuition for full course is $65 each year. The Dean is Dr. J. Wm. Funk, Baltimore. Total registration for 1900-1 was 75: graduates, 29. The fourth session begins October 1, 1901, and closes May 15, 1902.

MASSACHUSETTS.

Massachusetts, population 2,805,346, has four medical colleges: Medical School of Harvard University, Boston University School of Medicine, College of Physicians and Surgeons, and Tuft's College Medical School. They are all situated in Boston, a city of 500,892 inhabitants, and enjoy in common the following clinical advantages: The Massachusetts General Hospital, in which during the past year 5086 patients were treated in the wards and 31,003 in the out-patient departments; the Boston City Hospital, where during that time 8719 ward patients and 22,640 out-patients were treated, and the Massachusetts Charitable Eye and Ear Infirmary, which furnished treatment for 22,349 patients during the past year. Library facilities are good. Board and lodging can be obtained for from $5 to $7 per week.

MEDICAL SCHOOL OF HARVARD UNIVERSITY.—This was organized in 1872 as the Medical Department of Harvard University, and has a faculty composed of 20 professors, 10 associates and assistants, and 1 demonstrator, a total of 31. Besides the clinical advantages mentioned, the Boston Lying-in Hospital, the Boston Dispensary, where 43,918 patients were treated last year; the Infants' Hospital, the Children's Hospital, Long Island Hospital, containing 250 beds, and the Marine Hospital all furnish excellent opportunity to the student for clinical study. Students are also permitted to visit the Free Hospital for Women and Carney Hospital on application to the physicians on duty. Candidates for admission "must present a degree in Arts, Literature, Philosophy or Science from a recognized college or scientific school, with the exception of such persons, of suitable age and attainments, as may be admitted by special vote of the faculty in each case." Each candidate is required to hand in the original note-book in which he recorded the work performed by him in qualitative analysis, and also to pass a written examination in theoretical and descriptive chemistry. If conditioned in chemistry one year is allowed in which to remove the condition. The laboratories and lecture rooms offer ample facilities and the equipment is good; special facilities are open to those desiring to pursue advanced or original work. The course of study covers four years of nine months each; the course is graded, and each correlated group as taken up presents sufficient variety to avoid monotony. A series of written, oral and practical examinations are distributed throughout the course of study. Fees: Matriculation, $5; for the first three years, $200 each, and for the last year, if the three previous years have been taken in this school, $130; total of other fees charged is $22. The Dean is Dr. William L. Richardson, 688 Boylston St., Boston. Total registration for 1900-1 was 591; graduates, 116. The 120th session begins September 26, 1901, and ends June 26, 1902.

BOSTON UNIVERSITY SCHOOL OF MEDICINE.—Homeopathic. This school was organized in 1873; in 1874 the New England Female Medical College, founded in 1848, was merged into it. The faculty includes 17 professors, 21 associates and lecturers, and 20 instructors and assistants, a total of 58. Clinical material is furnished by the Massachusetts Homeopathic Hospital, containing 225 beds, and a dispensary and maternity hospital. Candidates who have taken their degree in arts, philosophy or science, are not examined; all others are examined in English, Latin, French or German or history, mathematics and physics. The instruction is graded and covers a period of four years, eight months each. Total fees for the first year is $105; for the second and third, $125 each, and for the last year, $155. The Dean is Dr. John P. Sutherland, 295 Commonwealth Ave., Boston, Mass. Total registration for 1900-1 was 127; graduates, 24. The twenty-ninth session opens October 3, 1901, and closes June 6, 1902.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1880, and has a faculty of 24 professors, and 9 lecturers and assistants, a total of 33. Clinical facilities are furnished by the North End Hospital and Dispensary, Union General Hospital, and the city and state institutions. The requirements for admission are those of the Association of American Medical Colleges, of which this school is a member. The course of study covers graded work for four years of eight months each. The total fees for the first year are $100, and for each of the other years about $110, with a graduating fee of $30. The Registrar is Dr. John H. Jackson, 155 Franklin St., Fall River. Total students registered 1900-1 was 127; graduates, 9. The twelfth session begins September 25, 1901, and ends June 26, 1902.

TUFTS COLLEGE MEDICAL SCHOOL.—This school was organized in 1893 as the Medical Department of Tuft's College. It has a faculty of 16 professors, 6 assistant professors and 31 lecturers, instructors and assistants, a total of 53. Clinical material is furnished by the Boston Dispensary, Cambridge Hospital, St. Elizabeth's Hospital, Carney Hospital and the college dispensary; the student has also the advantages derived from an out-department in connection with the Boston Dispensary. "Graduates of a high school, college or university, and students having certificates of entrance to a college or university, or holding the state of New York Regents' certificate," also certain approved preparatory school graduates, are admitted without examination; all others must pass an examination in English, Latin, physics and mathematics, including arithmetic, elementary algebra and plane geometry. The laboratories and lecture rooms are ample in their equipment and capacity. Teaching is carried on by means of lectures, recitations and practical work in the laboratories and clinics; frequent examinations are held during a course and a final examination on completing the subject. Graded instruction covering four years of eight months each makes up the full course. The total fees is $125 each year; dissecting material is furnished at cost. The Dean is Dr. Harold Williams, 528 Beacon St., Boston, Mass. Total number of students for 1900-1 was 277; graduates, 35. The ninth session begins October 2, 1901, and ends May 28, 1902.

MICHIGAN.

Michigan, population 2,420,982, has seven medical colleges. Two of these, University of Michigan Department of Medicine and Surgery and the Homeopathic College of the University of Michigan, are located at Ann Arbor, a town of 14,509 people. Board and lodging cost from $2.50 to $5 a week. Detroit, a city of 285,704 inhabitants, contains three medical colleges, as follows: Detroit College of Medicine, Detroit Homeopathic College and the Michigan College of Medicine and Surgery. Board and room can be obtained for $3 a week upwards. Grand Rapids Medical College is located in Grand Rapids, population 87,565, and here the cost of room and board is from $3 to $3.50 a week. The other school, Saginaw Medical College, is located in Saginaw, a city having a population of 42,345. Board and lodging can be procured for from $3 to $4.50 a week.

Ann Arbor.

UNIVERSITY OF MICHIGAN DEPARTMENT OF MEDICINE AND SURGERY.—This department of the State University was organized in 1850 and has a faculty composed of 12 professors, 15 associates and lecturers, and 39 instructors, assistants, etc., a total of 66. The University Hospital, together with a lying-in department, furnish the clinical facilities. Beginning January 1, 1901, the requirements of admission provide that the applicant either by certificate or examination show a sufficient knowledge of the following: English grammar, rhetoric and composition, United States and general history, algebra, through quadratics, plane and solid geometry and plane trigonometry; physics, biology and chemistry; German or French, and Latin. The laboratories and their equipment are good, and the training in them and in didactic work is thorough. This school is a member of the Association of American Medical Colleges. The curriculum embraces four years of nine months each. A combined course, leading to degrees in both science and medicine in six years, is offered. The total fees for Michigan students for the entire course of four years is about $300, and for others $350. The Dean is Dr. Victor C. Vaughan, Ann Arbor. Total registration for 1900-1 was 563; graduates, 75. The next session begins September 25, and will end June 20, 1902.

HOMEOPATHIC COLLEGE, UNIVERSITY OF MICHIGAN.—This department of the University was organized in 1875 and has a faculty of 6 professors, 3 assistants and 2 non-resident lecturers; the remainder of the teaching force utilized is that of the other departments of this University. The Homeopathic Hospital, containing 140 beds, furnishes material for clinical teaching. The course covers four years of nine months each. The total fees for Michigan students are about $240 for the four years, and for other students about $295. The Dean is Dr. Walter B. Hinsdale, Ann Arbor. Total enrolment for 1900-1 was 68; graduates, 16. The present session began September 24.

Detroit.

DETROIT COLLEGE OF MEDICINE.—This school was formed in 1885 by the union of Detroit Medical College, organized in 1868,

and the Michigan College of Medicine, established 1880. The faculty embraces 21 professors, 44 lecturers, instructors, etc., and 30 clinical professors, a total of 95. Clinical facilities are offered by the following hospitals: St. Mary's and Harper, each of which contain a free dispensary; Woman's, St. Luke's, the Children's Free Hospital and the House of Providence. This school is a member of the Association of American Medical Colleges and the requirements of admission are those of that organization. The course covers four years of seven months each. The work includes laboratory, didactic and clinical study. Fees: Matriculation, paid once $5; tuition, each term, $60; hospital and laboratory tickets, each $10, and extra senior fees, $40. The Secretary is Dr. H. O. Walker, Detroit. Total enrolment for 1900-1 was 224; graduates, 45. The next session begins September 25, and will close May, 1902.

MICHIGAN COLLEGE OF MEDICINE AND SURGERY.—This school was organized in 1888, and has a faculty of 14 professors and 9 assistants, in all 23. Clinical facilities are offered by a college dispensary, the Emergency Hospital and Detroit Eye and Ear Infirmary. This school is a member of the Association of American Medical Colleges and the requirements for admission are those established by that Association. The course covers graded work for four years of seven months each. Fees: For the first two years, $85 each; third year, $70, and $95 for the fourth year. The Dean is Dr. Hal. C. Wyman, 46 W. Adams Ave., Detroit. Total registration for 1900-1 was 75; graduates, 25. The fourteenth session began September 18, and will end April 24, 1902.

DETROIT HOMEOPATHIC COLLEGE.—Homeopathic. This was organized in 1899 and has a faculty of 18 professors, and 15 lecturers, assistants, etc., in all 33. Grace Hospital and a college dispensary are available for study of clinical cases. Unless possessing certificate of an equal amount of work completed, applicants for admission will be examined in English, arithmetic, history, geography and elementary Latin. The course embraces work for four years, seven months making a year. Fees: First year, $80; second, $75; third, $65, and $85 for the fourth year. The Dean is Dr. D. A. MacLachlan, Detroit. Total enrolment for 1900-1 was 41; graduates, 4. The next session begins September 25, and will close April 22, 1902.

Grand Rapids.

GRAND RAPIDS MEDICAL COLLEGE.—This was organized in 1897 as a three-year school, but the catalogue shows that all students matriculating after January 1, 1901, will be compelled to take a four-year course of six months. The faculty is made up of 23 professors and 8 associates, assistants, etc., in all 31. Clinical cases in the U. B. A. Hospital, St. Mary's, Woman's Butterworth Hospitals, and St. John's Orphan Asylum and a college dispensary are available for study. The total fees are in the neighborhood of $65 for each year. The Dean is Dr. E. G. Edwards, Middlcomb Bldg., Grand Rapids. Total enrolment for 1900-1 was 47; graduates, 17. Next session opens about October 1, 1901.

Saginaw.

SAGINAW VALLEY MEDICAL COLLEGE.—This school was organized in 1896, and claims a teaching force of 30. Clinical material is supplied by a college hospital and a college dispensary. The catalogue states that the equivalent education to graduation from a recognized high school is required for admission. The course as shown covers four years of eight months each: Fees: Matriculation, paid once, $5; tuition, each year, $50; laboratory and hospital and dissecting ticket, each $10, and graduation fee, $25. The Secretary is Dr. W. B. Cornell, Saginaw. Total enrolment for 1900-1 was 102; graduates, 24.

MINNESOTA.

Minnesota, population 1,751,394, contains three medical colleges: College of Homeopathic Medicine and Surgery, Hamline University College of Medicine, and College of Medicine and Surgery. They are all situated in Minneapolis, a city with a population of 202,718, and owing to its proximity to St. Paul, the following clinical advantages are available to them: City Hospital, Minneapolis; City Hospital, St. Paul; and St. Luke's and St. Joseph's Hospitals, both in St. Paul. The average cost of board and lodging is $20 a month. An agreement as to requirements for admission has been entered into between the University of Minnesota and Hamline University. They are (a) proof that the candidate has completed work in English composition and rhetoric; history, both ancient and modern; physiology, physics, algebra, geometry, and Latin equal to one year's work, or (b) ability to pass a satisfactory examination in these subjects.

COLLEGE OF MEDICINE AND SURGERY.—This is a department of the University of Minnesota and was organized in 1883. Until 1883 its work was only to examine for the degrees of B. M. or M. D., but at that time, with the absorption of the Minnesota Hospital Medical College and the St. Paul Medical College, it was reorganized and its present function assumed. Its faculty is made up of 24 professors, 11 clinical professors, 22 instructors and lecturers, and 20 assistants, a total of 77. Besides the clinical advantages enjoyed in common with the other schools, St. Mary's, St. Barnabas and Asbury Methodist Hospitals, the City and County Hospitals of St. Paul and the St. Paul Dispensary, as well as the college dispensary, all furnish valuable material for clinical study. This college is a member of the Association of American Medical Colleges. The medical buildings, four in number, offer good laboratory and lecture room facilities, and the equipment is all that is needed for thorough instruction. The curriculum covers four years of nine months each and the work is carefully graded. The total fees for each year is $100. The Dean is Dr. Parks Ritchie, Minneapolis. Total number of students registered for 1900-1 was 322; graduates, 60. The next session opens September 23, 1901, and closes June 5, 1902.

HAMLINE UNIVERSITY COLLEGE OF MEDICINE.—This is the Medical Department of Hamline University, and was organized in 1883. Its faculty is composed of 27 professors, 6 associate and clinical professors, and 12 instructors and assistants, a total of 45. The laboratories and lecture rooms are large, well lighted and supplied with all the necessary equipment. Besides the hospitals mentioned, clinical work is offered to the student in Asbury Methodist Hospital, Barnabas and St. Mary's Hospitals in Minneapolis, Bethesda Hospital in St. Paul, and the college dispensary. This school belongs to the Association of American Medical Colleges. The course of study covers graded work for four years, nine months making a year. Total fees, first year, $87.50; second year, $82.50, and for each of the last two, $75. The Dean is Dr. L. M. Crafts, Minneapolis. Total number of students 1900-1 was 131; graduates, 25. The next session begins September 17, 1901, and ends June 5, 1902.

COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY.—This is a department of the University of Minnesota and was organized in 1888. The faculty comprises 17 professors and 5 assistants, 22 in all. The primary branches are taught by the professors of the College of Medicine and Surgery. The course is graded, extending over four years of eight and one-half months each. The total fees for the first two years is $100 each, and $80 each for the last two years. The Dean is Dr. Alonzo P. Williamson, Minneapolis. Total number of students registered in 1900-1 was 26; graduates, 4. The next session opens September 23, 1901, and closes June 5, 1902.

MISSOURI.

Missouri, population of 3,106,665, has fifteen medical colleges. St. Louis, population 575,238, contains six of these, viz., St. Louis College of Physicians and Surgeons, American Medical College, Homeopathic Medical College of Missouri, Marion-Sims Beaumont College of Medicine, Washington University Medical Department, and Barnes Medical College. Board and lodging can be procured for from $3.50 to $5 a week. Kansas City, with 163,752 inhabitants, also has as follows: Kansas City Medical College, University Medical College, the Hahnemann Medical College of Kansas City, Woman's Medical College, Medico-Chirurgical College and Eclectic Medical University. Room and board can be obtained in this city for from $3 to $5 a week. Ensworth Medical College and Central Medical College are located in St. Joseph, population 102,979; board and room can be had for from $2.50 to $5 a week. The Department of Medicine of the University of Missouri is at Columbia, a town of 5651. Board and lodging can be obtained at Columbia for from $2 to $5 a week.

St. Louis.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1878, and has a faculty of 21 professors, 19 lecturers, demonstrators, and clinical instructors, and 4 special lecturers, a total of 44. The resources for clinical instruction are Jefferson Hospital, which is open to students of this college only; City Hospital, with 600 beds; French Hospital, having 250 beds; City Insane Asylum; City Poorhouse and the college dispensary. Applicants for admission must show that they are possessed of the requirements prescribed by the Association of American Medical Colleges, of which this college is a member. The laboratory and lecture-room space and the equipment are ample. The course of study covers four years of seven months each, and is graded. Total fees for the first year are $70, second $60, third $50, and $75 for the fourth year. The Dean is Dr. Waldo Briggs, 1405 Olive St., St. Louis. Total number of students registered, 1900-1, was 243; graduates, 52. The twenty-third session began September 17, 1901, and ends April 9, 1902.

AMERICAN MEDICAL COLLEGE.—Eclectic. It was organized in 1873, and has a faculty of 14 professors, and 13 clinical instructors, a total of 27. Metropolitan Hospital, containing 40 beds, and a college dispensary supply clinical material. The requirements for admission are those of the National Confederation of Eclectic Medical Colleges, of which this college is a member. The course of study covers four years of twenty-six weeks each. The total fees for the first two years are $80 each, third year $75, and $100 for the fourth year. Total registration for 1900-1 was 75; graduates, 16. The Dean is Dr. E. Younkin, St. Louis. The present session opened September 16, 1901, and closes March 25, 1902.

HOMEOPATHIC MEDICAL COLLEGE OF MISSOURI.—This was organized in 1882 and has a faculty of 26 professors and 5 demonstrators and assistants. Clinical facilities are offered by the City Hospital, Children's Free Hospital and a college dispensary. The curriculum covers four years of seven months each. Fees: First year, $80; second, $75; third, $60, and $85 for the fourth year. The Dean is Dr. W. B. Morgan, St. Louis. Total registration for 1900-1 was 66; graduates, 11. The present session opened September 10, 1901, and closes April 17, 1902.

MARION-SIMS BEAUMONT MEDICAL COLLEGE.—By the recent union of Marion-Sims, which was organized in 1890, and Beaumont Hospital Medical College, organized in 1886, the present school has been founded. The faculty is composed of 36 professors, 20 lecturers and assistants, and 4 demonstrators, a total of 60. Clinical facilities are offered by Alexian Brothers' Hospital, with 250 beds; St. Mary's Hospital, containing 200 beds; Rebekah Hospital, having a capacity for 50 patients; St. Mary's Infirmary, containing 150 beds; the City Hospital and Insane Asylum, each with a capacity of 600 patients. Grand Avenue Dispensary also furnishes good material for practical instruction. The requirements for admission are those outlined by the Association of American Medical Colleges, of which this college is a member. The buildings afford ample laboratory and lecture-room space and they are well equipped. The course of study embraces laboratory and clinical instruction,

with recitations and lectures. The curriculum covers four years of seven months each. The total fees for the first year are $85; for the second and third, $80 each, and $100 for the fourth. The Secretary is Dr. H. W. Loeb, St. Louis. Total number of students registered for 1900-1 was 366; graduates, 87. The next session opens October 1, 1901, and closes May 1, 1902.

WASHINGTON UNIVERSITY MEDICAL DEPARTMENT.—This school was organized in 1891 from the St. Louis Medical College, which was organized in 1841, and in 1899 the Missouri Medical College, organized in 1840, was added. The faculty comprises 33 professors, 19 clinical professors and lecturers, and 4 instructors, a total of 56. Clinical material is furnished by the St. Louis Mullanphy Hospital, St. John's Hospital, the Polyclinic and Bethesda Hospitals and O'Fallon Dispensary; the out-patient departments also furnish good opportunities for clinical study. In addition to these, the City Hospital, French Hospital, Insane Asylum and Poorhouse is used in common with the other schools. The requirements for admission are claimed to be those of the Association of American Medical Colleges. The college buildings, of which there are two, furnish good laboratory and lecture-room facilities. The course is four years of seven months each, and the system of study embraces laboratory, didactic and clinical teaching. The total fees for the first year, $121; second, $116, and for the third and fourth years, $100 each. The Dean is Dr. J. B. Shapleigh, St. Louis. Total registration of students for 1900-1 was 227; graduates, 54. The next session opens September 26, 1901, and closes May 8, 1902.

BARNES MEDICAL COLLEGE.—This school was organized in 1892, and has a faculty of 24 professors, 9 lecturers, and 11 assistants and instructors, a total of 44. The clinical advantages are those offered by Centenary Hospital, with 150 beds; City Hospital; the college dispensary and the outdoor obstetrical department. This college is a member of the Association of American Medical Colleges and the requirements for admission are those prescribed by that organization. The laboratories are well equipped and other facilities ample. The course of study includes graded work for four years of seven months each. The total fees for the first three years are $75 each, and $85 for the fourth year. The Secretary is Dr. Pinckney French, Century Bldg., St. Louis. Total registration for 1900-1 was 520; graduates, 111. The ninth session opens Sept. 23, 1901, and closes April 11, 1902.

Kansas City.

KANSAS CITY MEDICAL COLLEGE.—This was established in 1869, and has a faculty made up of 19 professors, and 12 lecturers, demonstrators, etc., in all 31. The clinical facilities are those of St. Joseph's Hospital, which also contains an out-patient department; the City Hospital, St. Margaret's Hospital, Scarritt Hospital, St. Anthony's Home for Children and the college dispensary. This college is a member of the Association of American Medical Colleges and its requirements for admission are governed by the rules of that Association. The building is large and well equipped, the course is graded and the classes in practical work are divided into sections of ten each, in order that personal instruction may be obtained. The curriculum embraces four years of seven months each. The total fees for the first two years are $75 each, for the third $80, and $85 for the fourth. The Dean is Dr. Andrew S. Fulton, Deardoff Bldg., Kansas City. Total registration of students for 1900-1 was 114; graduates, 44. The thirty-third session opened Sept. 17, 1901, and closes March 21, 1902.

UNIVERSITY MEDICAL COLLEGE.—This was organized in 1881 as the University of Kansas City Medical Department and in 1888 was reorganized under its present name. Its faculty comprises 21 professors, 11 adjunct professors and lecturers, and 14 assistants, a total of 46. Clinical material is furnished by the University Hospital, the City Hospital, German Hospital, Home for the Aged, containing 147 beds; the Sisters' Hospital, Scarritt and St. Margaret's Hospitals, the Children's Home, St. Joseph's Orphan Asylum, and the college dispensary and obstetric department. Instruction is given by means of lectures, recitations, demonstrations, and laboratory work and clinics. The requirements for admission are those of the Association of American Medical Colleges, of which this school is a member. The college building, which has been recently enlarged, furnishes ample accommodations for laboratories and lecture rooms. The course of study covers four years of six months each, and the work is graded. The total fees for each of the first two years are $80, for the third $60, and $85 for the fourth year. The Dean is Dr. Samuel C. James, Junction Bldg., Kansas City. The total number of students registered in 1900-1 was 246; graduates, 69. The twenty-first session began Sept. 9, 1901, and ends March 26, 1902.

KANSAS CITY HOMEOPATHIC MEDICAL COLLEGE.—This school was organized in 1888 and has a faculty of 32 men. The City Hospital, Homeopathic Hospital, the Sanitarium, Scarritt, University, Women's and Children's, German, Bethany and Children's Hospitals are open to its students for clinical study. The college dispensary and clinics also supply clinical material. Applicants for admission must show by diploma, certificate or examination that they have a sufficient knowledge of English, arithmetic, geography, United States history, and Latin equal to one year's work. The course covers four years of seven months each. Total registration for 1900-1 was 50; graduates, 12. The fourteenth session began Sept. 9, 1901, and closes April 1, 1902. [Recently consolidated with the Kansas City University College of Homeopathic Medicine and Surgery, under the name, Hahnemann College of Kansas City.]

WOMAN'S MEDICAL COLLEGE.—This school was organized in 1895, and has a faculty composed of 27 professors, 7 lecturers and assistants, and 3 special lecturers, a total of 37. Material for clinical study and demonstration is furnished by St. Joseph's, Scarritt, German, Sisters', Agnew, St. Margaret's and City Hospitals, and the college dispensary. The requirements for admission are those determined by the Association of American Medical Colleges. The course of study embraces graded work for four years of seven months each. The total fees for the first year are $68; second, $60; third, $55, and $80 for the fourth year. The Dean is Dr. Nannie P. Lewis, 1219 Wyandotte St., Kansas City. Total number of matriculants for 1900-1 was 23; graduates, 9. The seventh session opened September 18, 1901, and closes March 27, 1902.

MEDICO-CHIRURGICAL COLLEGE.—This school was organized in 1897 as the Kansas City College of Medicine and Surgery of Kansas City, Kan., and was reorganized the following year under its present name. Its faculty embraces a total of 46. Clinical facilities are furnished by the hospitals of Kansas City used in common by the medical colleges, and a college dispensary. The course covers four years of six months each. The fees are: For the first year, $70; second, $65; third, $55, and $75 for the fourth year. The Dean is Dr. George O. Coffin, Kansas City. Total registration for 1900-1 was 117; graduates, 25. The present session opened September 17, 1901, and closes March 20, 1902.

ECLECTIC MEDICAL UNIVERSITY.—Eclectic. This is a new school, organized in 1898, with 20 names in its faculty. The catalogue claims that the curriculum covers four years of six months each. Fees, about $70 each year, with a graduation fee of $15. The Dean is Dr. C. Palmer, Kansas City. Total students for 1900-1 was 48; graduates, 14. The next session begins Sept. 16, 1901, and ends March 14, 1902.

Columbia.

DEPARTMENT OF MEDICINE OF THE UNIVERSITY OF THE STATE OF MISSOURI.—This department was organized at Columbia in 1872. The faculty embraces 9 professors, 8 lecturers and assistants, and 8 instructors, a total of 25. The Parker Memorial Hospital and the Boone County Infirmary supply the clinical material. Applicants for admission are required to show by certificate that they possess educational acquirements which are about equivalent to a good high school education. The laboratories and lecture rooms are large and well equipped; in the scientific work they are the same as used by the other departments of the University, and they are under the charge of the heads of the different chairs. The training in the technical studies and laboratory work is excellent. The course covers four years of nine months each, and the work is graded. A combined course of six years is offered, conferring the degrees of both Arts and Medicine. There is no charge for tuition, the only expense being a library fee of $5 each year and the actual cost of the materials used in the laboratories. The Dean is Dr. A. W. McAlester, Columbia. Total registration of students for 1900-1 was 85; graduates, 11. The present session opened Sept. 10, 1901, and closes June 4, 1902.

St. Joseph.

ENSWORTH MEDICAL COLLEGE.—This was organized in 1888, and has a faculty of 18 professors and 5 lecturers and assistants, 23 in all. St. Joseph's Medical Hospital, with 250 beds; City Hospital, containing 40 beds; the State Hospital No. 2, which is open to the students once a week, and a college dispensary furnish clinical material. Applicants for admission must show by certificate or examination, that they possess a sufficient knowledge of English, arithmetic, algebra, physics and Latin equal to one year's instruction. The building furnishes ample laboratory and lecture-room facilities. The curriculum covers a graded course of four years of six months each. The fees are about $55 each for the first three years, and $75 for the fourth year. The Dean is Dr. Jacob Geiger, St. Joseph. The present session opened Sept. 16, 1901, and closes March 17, 1902.

CENTRAL MEDICAL COLLEGE.—This school was organized in 1894, and has a faculty made up of 16 professors and 14 lecturers, in all 30. The Methodist and St. Joseph's Hospitals, State Hospital No. 2, and the City and County Hospitals are available for clinical study; a college dispensary also supplies clinical material. The requirements for admission are the possession of a certificate for work completed, or an examination. The curriculum embraces four years of six months each. Fees: First year, $55; second, $50; third, $40, and $65 for the fourth year. The Secretary is Dr. T. E. Potter, St. Joseph. Total enrolment for 1900-1 was 57; graduates, 2. The seventh session began September 2, and will end March 1, 1902.

NEBRASKA.

Nebraska, population 1,066,300, has three medical colleges: Omaha Medical College, Lincoln Medical College, and John A. Creighton Medical College.

Omaha.

OMAHA MEDICAL COLLEGE.—This is the Medical Department of the University of Nebraska and was organized in 1881. It is situated in Omaha, a city with a population of 102,555, and its faculty is composed of 24 professors, 9 adjunct professors and lecturers, and 3 assistants, a total of 36. The Douglas County Hospital, accommodating 300 patients; Bishop Clarkson Memorial Hospital, Immanuel Hospital, the Omaha Methodist Hospital and the college dispensary furnish good material for clinical study and demonstration. This college is a member of the Association of American Medical Colleges and its requirements for admission are governed by that organization. The college building is well adapted for its purpose and the laboratories and lecture rooms are commodious and completely equipped. The course of work embraces graded studies covering four years of seven months each. The method of instruction is made up of didactic and clinical lectures, demonstrations, quizzes and laboratory work. The total fees for the first two years is $80 each, and $85 for each of the last two years. Board and lodging can be obtained for from $3 to $5 a week. The Secretary is Dr. Ewing Brown, Omaha. Total number of students registered in 1900-1 was 149; graduates, 23. The twenty-first session begins September 24, 1901, and will end April, 1902.

JOHN A. CREIGHTON MEDICAL COLLEGE.—This school was organized in 1892, and is also situated in Omaha. It is the Medical Department of Creighton University, and has a faculty of 27 professors, 8 associates and lecturers, and 7 assistants, a total of 42. The clinical facilities are those of St. Joseph's Hospital, containing 300 beds and having a clinical amphitheater connected with it; St. Bernard's Hospital, with 160 beds; Douglas County Hospital, Presbyterian Hospital, and the college dispensary; the material is abundant and varied. The requirements for admission are those of the Association of American Medical Colleges, of which organization this school is a member. The building, which was completed in 1898, contains excellent facilities for laboratory and lecture-room work, and the equipment is good. In the methods of instruction, including clinical, didactic and laboratory work, special emphasis is laid upon practical work. The course of study embraces four years of eight months each. The total fees for the first

two years is $80 each, and $85 for the last two years. The Dean is Dr. D. Bryant, McCague Bldg., Omaha. Total number of students registered in 1900-1 was 123; graduates, 27. The ninth session opens September 15, 1901, and closes April 15, 1902.

Lincoln.

LINCOLN MEDICAL COLLEGE.—Eclectic. This school was organized in 1889, and is situated in Lincoln, a city of 40,169 people. It has a faculty of 23 professors and 2 lecturers. The college dispensary furnishes clinical material. The requirements for admission are those of the National Confederation of Eclectic Medical Colleges, of which this college is a member. The course of study covers four years of twenty-eight weeks each. The total fees for the first year is $83; second, $78; third, $70, and $65 for the fourth year. The Dean is Dr. W. S. Latta, Lincoln. Total number of students for 1900-1 was 74; graduates, 12. The present session began September 15, 1901, and ends April, 1902.

NEW HAMPSHIRE.

New Hampshire, population 411,588, contains one medical college.

DARTMOUTH MEDICAL COLLEGE.—This school is the Medical Department of Dartmouth College, and is located in Hanover, population, 1825. The school was organized in 1797. Its faculty is made up of 14 professors and 3 demonstrators, 17 in all. The Mary Hitchcock Memorial Hospital, a college hospital of 36 beds, supplies the clinical material. Applicants for admission must possess an education at least equivalent to graduation from a registered high school. The laboratories of the academic department afford good facilities for work in physics, biology and chemistry. The course covers four years of twenty-six weeks each. Total fees for the first three years are $110, and $135 for the fourth year. The Dean is Dr. William T. Smith. The total number of students registered for 1900-1 was 89; graduates, 27. The work for the entering class begins with that of the academic department, commencing in September and closing in June; for the advanced classes it begins in July and ends in February.

NEW YORK.

New York State, population 7,268,894, has ten medical colleges. Seven of these, College of Physicians and Surgeons, Long Island College Hospital, New York Homeopathic Medical College, New York Medical College, Eclectic Medical College, Cornell University Medical College and the University and Bellevue Hospital Medical College are located in New York City, population 3,437,202. This city, with its hospitals and dispensaries, offers abundant clinical material. Board and lodging can be obtained for from $5 to $7 a week.

Albany Medical College is located in Albany, a city of 94,151 people, where board and room can be had for from $4 to $5 a week.

The University of Buffalo Medical Department is situated in Buffalo, population 352,387; here board and lodging can be obtained for from $3.50 to $5 per week.

The College of Medicine, Syracuse University, is in Syracuse, a city with 108,374 inhabitants. Board and lodging can be procured for from $3.50 a week upwards.

The laws of the state of New York require of the prospective student of medicine a preliminary education equivalent to that obtainable in a four years' course in any of the public high schools recognized by the regents as maintaining a satisfactory standard. Upon proof of at least this amount of education, a medical student certificate will be issued by the state authorities. The colleges, therefore, have a common standard for the requirements of admission.

New York City.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1807 and its present relation, that of medical department of Columbia University, was assumed in 1860. The faculty embraces 21 professors, 18 clinical and adjunct professors and 43 demonstrators, instructors, etc., a total of 82. The new Vanderbilt Clinic, where 48,967 patients were treated during the year 1900 and which is equipped with all modern appliances for the study and treatment of disease, and Sloane Maternity Hospital, containing 116 beds, offer exclusive clinical advantages to students of this school. Besides these, Roosevelt Hospital, containing 238 beds; New York Hospital, with 150 beds; Bellevue, 850 beds; Presbyterian, 330 beds; St. Luke's, General Memorial, and New York Foundling Hospitals, together with the Eye and Ear Institute, containing 40 beds, St. Mary's Free Hospital for Children, and the Hospital for the Ruptured and Crippled, all offer free clinical teaching to matriculants of this school. The laboratories, lecture rooms and amphitheaters are ample in equipment and accommodation; special provisions are made to equip each student thoroughly in each of the laboratories and thus make the work individual. The work is graded, covering four years of eight months each. The total fees for the first year are $205; for the second and third, $200 each, and $225 for the fourth year. The Dean is Dr. James W. Melvane, New York City. Total registration for 1900-1 was 801; graduates, 149. The next session begins Oct. 7, 1901, and ends June 11, 1902.

LONG ISLAND COLLEGE HOSPITAL.—This was organized in 1856, and has a faculty of 11 professors, 13 adjunct and clinical professors and 45 lecturers, instructors, etc., a total of 69. Long Island College Hospital, containing 300 beds and being connected with a four-story maternity hospital; Polhemus Memorial Clinic, and Hoagland Laboratory, completely equipped with the most modern apparatus, are all a part of the college. Besides the clinical facilities furnished by these, members of the faculty attend at Kings County, St. John's, Brooklyn, Norwegian, Williamsburg, Methodist Episcopal and the Brooklyn Eye and Ear Hospitals, where the students are offered opportunities for clinical study. Many of these also contain out-patient departments, thus permitting advanced students to attend personally to cases. Bedside instruction is also given in the wards. The course covers four years of thirty weeks each. Fees: First year, $190; second, $195; third, $160, and $145 for the fourth year. The Dean is Dr. Jarvis S. Wight, New York City. Total registration, 1900-1, was 187; graduates, 47. The forty-third session opens Oct. 1, 1901, and closes May 15, 1902.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND HOSPITAL.—Homeopathic. This school was organized in 1858 and has a faculty of 27 professors and 21 lecturers, instructors, etc., 48 in all. Flower Hospital, adjoining the college and having a completely equipped out-patient department, Metropolitan Hospital, New York Ophthalmic Hospital and the Laura Franklin Free Hospital for Children furnish the clinical facilities. The course covers four years of seven months each. Total fees for the first year, $110; second, $130 third, $125, and $155 for the fourth year. The Dean is Dr. Wm. T. Helmuth, 504 Fifth Ave., New York. Total number of students registered for 1900-1 was 107; graduates, 127. The next session begins Oct. 2, 1901, and ends May 8, 1902.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN.—Homeopathic. This school was organized in 1863, and has a faculty of 19 professors, 5 adjuncts and 19 lecturers and assistants, a total of 43. The college hospital and dispensary, the Memorial Hospital for Women, Metropolitan, Flower and the Laura Franklin Free Hospital for Children afford clinical material. The course covers four years of thirty weeks each. Fees: First year, $125; second, $110; third, $100, and $130 for the fourth year. The Dean is Dr. M. Belle Brown, 30 W. 51st St., New York. Total registration for 1900-1 was 33; graduates, 9. The next session opens Oct. 1, 1901, and closes May 14, 1902.

ECLECTIC MEDICAL COLLEGE.—This was organized in 1865 and has a faculty of 12 professors and 23 lecturers, demonstrators, etc., 35 in all. A college dispensary, Manhattan and Red Cross Hospitals and Muncie Sanatorium supply clinical facilities. The work covers four years of seven months each. Total fees: First year, $125; second, $120; third, $105, and $130 for the fourth year. The Dean is Dr. George W. Boskowitz, New York. Total registration for 1900-1 was 84; graduates, 12. The next session opens Sept. 24, 1901, and closes May, 1902. This school is a member of the National Confederation of Eclectic Medical Colleges.

CORNELL UNIVERSITY MEDICAL COLLEGE.—This department of Cornell University was established in 1898. The faculty is composed of 12 professors, 19 clinical professors, 31 instructors, and 36 clinical instructors and assistants, a total of 98. The City Hospital, having 1000 beds; Bellevue Hospital, New York Hospital, Presbyterian, Willard Parker and Reception, with 200 beds; New York Skin and Cancer; St. Francis, having a capacity of 230 beds; St. Vincent's, with 200 beds; the Manhattan Eye and Ear Hospital, and the Eye and Ear Infirmary, in addition to a large college dispensary, furnish the clinical resources; the material is abundant and varied. The first two years of the course are taken at Ithaca and the work is devoted to the fundamental scientific subjects. The last two years are spent mostly in practical and clinical work and the hospital advantages are utilized. The Loomis Laboratory, a five-story modern building, is well equipped and supplies ample practical laboratory facilities required in the advanced work. "The essential feature of the entire system is the division of the classes of the several years into small sections." Fees: First year, $190; second and third, $180 each, and $200 for the fourth year. The Dean is Dr. William M. Polk, New York. Total registration for 1900-1 was 356; graduates, 26. The next session opens Sept. 24, 1901, and closes June 19, 1902.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE.—This is a department of the New York University, and was founded in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. The faculty is composed of 30 professors, 33 clinical professors and lecturers, and 50 instructors, demonstrators, etc., in all 113. Bellevue and City Hospitals, Hospitals of the Workhouse and Almshouse, Manhattan State Hospital for the Insane, Willard, Parker and Reception Hospitals, Riverside Hospital for Contagious Diseases, Randall's Island, Presbyterian, St. Luke's, St. Vincent's, General Memorial, Gouverneur, Columbus, Harlem, New York Foundling, and the Society for the Lying-in Hospitals, the New York Eye and Ear Infirmary, and a large college dispensary are open to students of this school for a study of clinical cases. The Carnegie building, a new five-story structure adjoining the college, is devoted to laboratory instruction and investigation, and, with the other two large college buildings, affords good laboratory and lecture room facilities. The course of instruction covers four years of seven months each. Actual clinical teaching, in conjunction with and founded upon laboratory work, recitation and didactic teaching, is emphasized to the greatest possible degree. Fees: First year, $185; second and third, $180 each, and $195 for the fourth year. The Dean is Dr. Edward G. Janeway, New York City. Total registration for 1900-1 was 285; graduates, 43. The next session opens Oct. 2, 1901, and closes June 5, 1902.

Albany.

ALBANY MEDICAL CFLLEGE.—This school was organized in 1838, and in 1873 it assumed its present relations, as medical department of Union University. The faculty is composed of 13 professors, 10 adjunct and clinical professors, and 32 lecturers, instructors and assistants, a total of 55. Albany, St. Peter's, Child's and County Hospitals, South End Dispensary, Eye and Ear Infirmary and the Albany Hospital for Incurables, also the free dispensaries connected with each, are open to students for clinical study. The curriculum embraces graded work for four years of six months each. Teaching is carried on in the laboratories, clinics and lecture rooms. Examinations are held twice a year in all subjects. **Fees:** First year, $135; second, $120; third, $110, and $130 for the fourth year. The Dean is Dr. Albert Vander Veer, Albany.

Total registration for 1900-1 was 142; graduates, 28. The next session opens Sept. 24, 1901, and closes March 6, 1902.

Buffalo.

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT.—This was organized in 1846 and has a faculty made up of 26 professors, 27 adjunct and clinical professors, and 15 lecturers, etc., a total of 68. Buffalo General Hospital, Hospital of the Sisters of Charity, Erie County and German Hospitals and the German Deaconess' Home supply ample clinical material for study. A college dispensary, recently organized, is also of value in practical work. The buildings and hospitals are well equipped for clinical and laboratory work. Bedside instruction is insisted upon and the senior students are permitted to assist in operations and give anesthetics. This school is a member of the Association of American Medical Colleges. The course covers four years of seven months each. The total fees are: First year, $455; second, $55, and $15 each for the third and fourth years. The Dean is Dr. Matthew D. Mann, 37 Allen St., Buffalo. Total registration for 1900-1 was 212; graduates, 46. The fifty-sixth session opens Sept. 30, 1901, and closes May 2, 1902.

Syracuse.

COLLEGE OF MEDICINE, SYRACUSE UNIVERSITY.—Shis school was organized in 1872, as the medical department of Syracuse University. The faculty is composed of 16 professors and 25 lecturers, instructors, etc., in all 41. Clinical facilities are furnished by St. Joseph's Hospital, with a capacity for 200 patients; Hospital of the House of the Good Shepherd, Syracuse Hospital for Women and Children, Onondaga County Orphan Asylum, and the Syracuse Free Dispensary. The laboratories and amphitheaters are large and well equipped. This school is a member of the Association of American Medical Colleges. The curriculum embraces a four years' graded course, eight months making a school year. The total fees for each of the four years are $125. The Dean is Dr. Henry D. Didama, 424 S. Salina St., Syracuse. Total number of students registered for 1900-1 was 116; graduates, 19. The next session opens Oct. 1, 1901, and closes June 11, 1902.

NORTH CAROLINA.

North Carolina, population 1,893,810, has three medical schools. They are, Leonard School of Medicine, North Carolina Medical College, and the University of North Carolina Medical Department. The latter school does not confer degrees.

LEONARD SCHOOL OF MEDICINE.—This school was established in 1882 by the American Baptist Home Mission Society, for the purpose of training colored students of medicine. It is located in Raleigh, a city of 13,643, and has a faculty of 8 teachers. A free hospital and dispensary supplies clinical material. A preliminary entrance examination is given to applicants not possessing a certificate or diploma of educational requirements. The course covers four years of six months each. The total fees for each year are $75. The dormitory plan is adopted generally, and board and room costs $2 a week. The Dean is Dr. James McKee, Raleigh. Total enrolment for 1900-1 was 98; graduates, 18. Next session opens Sept. 28, 1901, and closes March 15, 1902.

NORTH CAROLINA MEDICAL COLLEGE.—This school was organized in 1893 and has a faculty of 6 teachers. It is located at Davidson, a village of 904 people, and a small hospital supplies the clinical facilities. The course covers but three years of eight months each. The requirements for admission claimed are those established by the Association of American Medical Colleges. Fees: First year, $90; second year, $85, and $100 for the third year. The President is Dr. J. P. Monroe, of Davidson. The present session began Sept. 5, 1901, and closes May 12, 1902.

UNIVERSITY OF NORTH CAROLINA MEDICAL DEPARTMENT.—This is a school not conferring degrees, but embracing the first two years of medical instruction covered in that time by the better class of medical colleges. It was organized in 1891. It is a member of the Association of American Medical Colleges, and its certificate of work completed is accepted by all colleges that are members of that association.

OHIO.

Ohio, population 4,157,545, has twelve medical colleges. Six of these, the Medical College of Ohio, Eclectic Medical Institute, Miami Medical College, Cincinnati College of Medicine and Surgery, Pulte Medical College and the Laura Memorial Woman's Medical College, are located in Cincinnati, a city of 325,902 inhabitants. The clinical advantages of Cincinnati are good; besides many smaller hospitals, the Cincinnati Hospital, where 4940 patients were treated in 1900, is open to the students for study. Board can be procured in Cincinati for from $3 to $5 per week.

Cleveland, population 381,768, contains three medical schools: Western Reserve University Medical College, Cleveland College of Physicians and Surgeons and the Cleveland Homeopathic Medical College. The City Hospital, with 275 beds, is used in common by them for clinical study. Board and lodging can be had for from $2.50 to $5 a week.

Columbus, population 125,560, contains two: Starling Medical College and Ohio Medical University. Board and lodging cost from $2.50 to $5 per week.

Toledo, with 131,822 people, has one medical school: Toledo College of Medicine. It has good clinical advantages. Board and room can be had for from $3 to $5 per week.

The laws of Ohio require that in order to practice medicine in this state, any student not possessing a diploma or certificate showing that he is possessed of the educational advantages required, must pass a satisfactory examination, under the direction of the State Board of Medical Registration and Examination, in the following subjects: English, including rhetoric and spelling; geography, arithmetic, algebra, physics, botany, United States history, and Latin equal to a year's work. This is the standard adopted by all the medical colleges in the state.

Cincinnati.

MEDICAL COLLEGE OF OHIO.—This is the Medical Department of the University of Cincinnati, organized in 1819, and has a faculty made up of 19 professors, 22 lecturers, demonstrators, etc., a total of 41. Good Samaritan Hospital, with 400 beds, Cincinnati Hospital and a well-equipped college dispensary furnish clinical facilities. The buildings supply ample laboratory and lecture-room space, and their equipment is good. The course of study is graded and covers four years of seven months each. This school is a member of the Association of American Medical Colleges. The total fees are for the first year, $105; for the second and third, $100 each, and $125 for the fourth year. Total registration of students for 1900 was 200, graduates 60. The Dean is Dr. P. S Conner, Cincinnati. The eighty-third session begins Oct. 2, 1901, and ends May, 1902.

ECLECTIC MEDICAL INSTITUTE.—Eclectic. This school was organized in 1845, and has a faculty of 29 members. The Seton Hospital, Cincinnati Hospital, and a college dispensary furnish clinical material. It is a member of the National Confederation of Eclectic Medical Colleges. The course covers four years of twenty-eight weeks each. The fees are $75 for each year, with a graduation fee of $25. The Dean is Dr. F. J. Locke, Newport, Ky. Total enrolment 1900-1,was 141, graduates 26. The next session begins Sept. 23, 1901, and closes April 15, 1902.

MIAMI MEDICAL COLLEGE.—This school was organized in 1852 and has a faculty of 18 professors and 16 lecturers and demonstrators, a total of 34. The clinical facilities are furnished by the Cincinnati Hospital and a college dispensary. This college is a member of the Association of American Medical Colleges. The curriculum embraces a four-year graded course of seven months each. The total fees are, for the first year, $115; for the second and third, $110, and $130 for the fourth year. The Secretary is Dr. Oliver P. Holt, 134 W. Ninth St., Cincinnati. Total registration for 1900-1 was 112; graduates, 25. The next session opens Oct. 1, 1901, and closes May, 1902.

CINCINNATI COLLEGE OF MEDICINE AND SURGERY.—This school was organized in 1852, and has a faculty of 21 professors and 16 lecturers, demonstrators, etc., 37 in all. St. Mary's, Cincinnati, the Jewish, and Christ's Hospitals supply material for clinical study. This school is a member of the Association of American Medical Colleges. The work covers four years of seven months each, and is graded. The total fees for the first three years are $75 each, and $100 for the fourth year. The Dean is Dr. F. V. Fitzpatrick, 32 Garfield Place, Cincinnati. Total enrolment for 1900-1 was 82, graduates 16. The next session opens Sept. 26, 1901, and closes May, 1902.

PULTE MEDICAL COLLEGE.—Homeopathic. This was organized in 1872 and has a teaching force of 22 professors and 9 assistants, 31 in all. Cincinnati Hospital, Bethesda Hospital, and a college dispensary supply clinical material. The curriculum covers four years of seven months each. Fees: First year, $80; for the second and third, $75 each, and $100 for the fourth. The Dean is Dr. J. D. Buck, Cincinnati. Total enrolment for 1900-1 was 39, graduates 5. The next session opens Oct. 2, 1901, and closes May 6, 1902.

LAURA MEMORIAL WOMAN'S MEDICAL COLLEGE.—This school was formed in 1895 and has a faculty of 19 professors and 7 assistants, in all 26. Presbyterian and Cincinnati Hospitals and a college dispensary supply material for clinical study; the out-patient department of Presbyterian Hospital is open to students of this school exclusively. This college is a member of the Association of American Medical Colleges. The course embraces four years' study of seven months each. The total fees are $50 for each year. The Dean is Dr. John M. Winthrow, Cincinnati. Total registration of students for 1900-1 was 24, graduates 5. The next session opens Sept. 26, 1901, and closes May 1, 1902.

Cleveland.

WESTERN RESERVE UNIVERSITY MEDICAL COLLEGE.—This department of Western Reserve University was organized in 1843. Its teaching faculty includes 19 professors, 17 lecturers and demonstrators, and 20 assistants, a total of 56. The clinical facilities are offered students of the school by Lakeside Hospital, having 250 beds; St. Vincent's Hospital, with 75 beds; City Hospital, containing 150 beds; Home of Maternity, and a college dispensary. The buildings afford ample laboratory and lecture-room space, and the equipment is good; a new clinical laboratory has recently been added. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years' work, of eight months each. The total fees are $125 for each year. The Dean is Dr. Benjamin L. Millikin, 278 Prospect St., Cleveland. Total enrolment for 1900-1 was 133, graduates 24. The next session begins Oct. 2, 1901, and ends June 12, 1902.

CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1863, but did not assume its present name and become the Medical Department of Ohio Wesleyan University until 1896. The faculty is composed of 25 professors and 22 associates, lecturers, etc., 47 in all. Cleveland General Hospital, City Hospital, St. Alexis and St. John's Hospitals, and a college dispensary are available for clinical study. Beginning Sept. 18, 1901, the work was made continuous, the calendar year being divided into three terms of four months each; the work of two terms constitutes the maximum amount of credit that can be obtained in a collegiate year, four years being necessary for graduation. This school is a member of the Association of American Medical Colleges. The total fees for the first two years are $130 each, and $110 for the last

two years. The Dean is Dr. C. B. Parker, 425 Euclid Ave., Cleveland. Total enrolment for 1900-1 was 78, graduates 15. The present term began Sept. 18, 1901.

CLEVELAND HOMEOPATHIC MEDICAL COLLEGE.—Homeopathic. This school was founded in 1890 by a consolidation of Cleveland University of Medicine and Cleveland Medical College. The faculty includes 29 professors and 16 adjuncts, lecturers, etc., 45 in all. The clinical facilities are obtained from the Cleveland Homeopathic Hospital, and a college dispensary. The course embraces four years of thirty weeks each. Fees: First year, $110; second and third years, $105 each, and $125 for the fourth year. The Dean is Dr. Gaius J. Jones, Cleveland. Total number of students registered 1900-1 was 150, graduates 46. The present session opened Sept. 18, 1901, and closes April 9, 1902.

Columbus.

STARLING MEDICAL COLLEGE.—This school was organized in 1847 and has a faculty composed of 13 professors and 16 lecturers, associates, etc., a total of 29. St. Francis Hospital, which is under the control of this faculty, Hawke's Hospital, of Mt. Carmel, and a college dispensary are available for clinical study. This college is a member of the Association of American Medical Colleges. The laboratory and lecture-room space is ample. The work covers four years of seven months each. Fees: First year, $73; second, $71; third, $60, and $80 for the fourth year. The Dean is Dr. Starling Loving, Columbus. Total enrolment for 1900-1 was 173, graduates 32. The present session opened Sept. 11, 1901, and closes April 10, 1902.

OHIO MEDICAL UNIVERSITY.—This school was organized in 1890 and has a faculty of 26 professors and 5 assistants, 31 in all. The Protestant Hospital, Ohio Penitentiary Hospital, and a college dispensary provide material for clinical work. The amphitheaters and laboratories are well equipped. This school is a member of the Association of American Medical Colleges. The course embraces work over four years of seven months each. Fees: First year, $86; second, $79; third, $51, and $61 for the fourth year. The Dean is Dr. George M. Waters, Columbus. Total number of students enrolled for 1900-1 was 228, graduates 45. The present session began Sept. 11, 1901, and ends April 15, 1902.

Toledo.

TOLEDO MEDICAL COLLEGE.—This school was organized in 1882 and has a faculty made up of 18 professors and 16 lecturers and assistants, in all 34. Toledo Hospital, St. Vincent's and Robinwood Hospitals, Lucas County Infirmary Hospital, Toledo State Hospital for the Insane and a free dispensary supply good clinical facilities. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of seven months each. The fees are $75 for each year with a matriculation fee of $5, payable once. The Secretary is Dr. Park L. Myers, 1921 Franklin Ave., Toledo. Total enrolment for 1900-1 was 55, graduates 8. The next session opens Sept. 26, 1901, and closes April 24, 1902.

OREGON.

Oregon, population 413,536, has two medical colleges: Medical Department Willamette University, and University of Oregon, Medical Department.

MEDICAL DEPARTMENT WILLAMETTE UNIVERSITY.—This school is situated in Salem, a town of 4,258 people, and was organized in 1864. The faculty consists of 17 teachers. Clinical facilities for study are supplied by Salem Hospital, and a college dispensary. This school is a member of the Association of American Medical Colleges. The course embraces four years' work of six months. Fees: First year, $110; second, $100; third, $75; and $50 for the fourth year. Board and lodging costs from $3 to $5 a week. The Dean is Dr. W. H. Byrd, Salem. Total enrolment for 1900-1 was 27, graduates 5. The next session begins Oct. 2, 1901, and ends April 2, 1902.

UNIVERSITY OF OREGON MEDICAL DEPARTMENT.—This department of the State University was organized in 1887 and has a faculty of 15 professors and 11 special lecturers, a total of 26. It is situated in Portland, population 90,426. Good Samaritan and St. Vincent's Hospitals, containing 200 and 350 beds respectively, furnish good material for clinical study. The requirements for admission are those of the Association of American Medical Colleges. The college building is modern and well equipped, presenting ample teaching facilities. The course is four years of six months each. Fees: First year, $142.50; for the second and third, $137.50 each, and for the fourth the only fee is $7.50 for examination fee. Board and room can be obtained for from $4 to $6 a week. The Dean is Dr. Simeon E. Josephi, Portland. Total number of students for 1900-1 was 64, graduates 11. The next session opens Oct. 1, 1901, and closes April, 1901.

PENNSYLVANIA.

Pennsylvania, population 6,302,115, has six medical colleges. Of these Philadelphia, having a population of 1,293,697, contains five, as follows: University of Pennsylvania Department of Medicine, Jefferson Medical College, Hahnemann Medical College, Woman's Medical College of Pennsylvania, and the Medico-Chirurgical College of Philadelphia. The clinical facilities of Philadelphia present abundant and varied material for study. Besides the individual hospitals connected with each of the schools the charity hospitals are open to all the students in common. Board and lodging cost from $4 a week upwards.

The other school, Western Pennsylvania Medical College, is situated in Pittsburg, a city of 321,616 people. The cost of board and lodging is from $4 to $6 a week.

A preliminary examination is required of all applicants for a license to practice medicine or surgery in the state. This examination is held at stated intervals by the State Examiners, and includes: (a) English composition, grammar and rhetoric; (b) mathematics, covering algebra and plane geometry; (c) elementary physics, and (d) United States history, and (e) Latin equivalent to a year's study. Upon passing a successful examination a medical-student certificate is issued to the applicant. This certificate will admit the possessor to matriculation in any medical college in the state.

Philadelphia.

UNIVERSITY OF PENNSYLVANIA MEDICAL DEPARTMENT.—This is the oldest medical college in this country, having been organized in 1765 as the medical department of the College of Philadelphia; the first degree was granted in 1768. When the University of Pennsylvania was organized, in 1782, it became the medical department of the University, its present relation. The faculty is made up of 19 professors, 7 clinical professors, and 77 assistants, lecturers, etc., a total of 103. Abundant and varied clinical material is furnished by the University Hospital, where during 1899 there were 9215 cases treated; Maternity Pavilion, with 50 beds; Philadelphia Hospital, containing 1000 beds; Pennsylvania, Children's and German Hospitals, and the Southeastern Hospital and Dispensary. Special attention is paid to bedside instruction and to thoroughly practical work. Applicants for admission must furnish evidence of the education required to enter the academic department of the University. The buildings known as Medical Hall, Laboratory Hall and the Laboratory of Hygiene supply excellent laboratory and lecture room facilities and they are well equipped. The course embraces study for four years of eight months each. The total fees for each year are $200 each, with a matriculation fee of $5 for the first year. The Dean is Dr. John Marshall, Philadelphia. Total enrolment for 1900-1 was 565; graduates, 160. The next session opens October 2, 1901, and closes June, 1902.

JEFFERSON MEDICAL COLLEGE.—This school was organized in 1826, and has a faculty of 15 professors, 11 clinical and adjunct professors, and 58 lecturers, demonstrators, etc., a total of 84. Jefferson Hospital, together with its Maternity Department, are used exclusively by students of the school for clinical study. Bedside instruction is given daily to small sections of the senior class. In addition the following hospitals are open for study of clinical cases: Pennsylvania, Philadelphia, St. Joseph's, German, Municipal and Will's Eye Hospitals. This college is a member of the Association of American Medical Colleges, and applicants for admission must conform to the regulations of that association. The course of study covers graded work for four years of eight months each. The laboratories are large and well equipped, a new five-story laboratory building having recently been added; the lecture rooms and amphitheaters are also ample. The tuition is $150 a year, with a matriculation fee of $5, paid but once. The Dean is Dr. James W. Holland, Philadelphia. The total number of students for 1900-1 was 736; graduates, 106. The next session opens October 1, 1901, and closes May 29, 1902.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL.—Homeopathic. This was organized in 1848 and has a faculty of 15 professors and 42 lecturers, instructors, etc., in all 57. Hahnemann College Hospital and Pennsylvania Hospital furnish material for clinical work. The requirements for admission are those established by the Intercollegiate Committee of the American Institute of Homeopathy. The work covers four years of thirty weeks each. Fees: First year, $105; second and third, $125 each, and $155 for the fourth year. Total number of students for 1900-1 was 264; graduates, 52. The Dean is Dr. Pemberton Dudley, Philadelphia. The next session begins September 30, 1901, and will end May 15, 1902.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA.—This school was organized in 1850, and has a faculty of 11 professors, 19 clinical and assistant professors, and 23 lecturers, etc., in all 53. Clinical facilities are offered exclusively to this college by the Woman's Hospital, West Philadelphia Hospital for Women. Other clinical advantages offered are those of the Pennsylvania, German, Children's and Philadelphia hospitals, Will's Hospital for Diseases of the Eye and the Philadelphia Lying-in Charity. This school is a member of the Association of American Medical Colleges, and the requirements for admission are those established by the organization. The lecture room and laboratory equipment is good. The curriculum covers four years of eight months each. Fees: First year, $141.50; second, $138.50; third, $135.50, and $100.50 for the fourth year. The Secretary is Dr. C. N. Pierce, Philadelphia. Total enrolment for 1900-1 was 175; graduates, 37. The fifty-second session begins September 26, and will end May 22, 1902.

MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA.—This school was organized in 1881 and has a faculty made up of 19 professors, 10 clinical and associate professors, and 43 lecturers, demonstrators, etc., 72 in all. Opportunities for clinical study are offered exclusively to students of this school by the Medico-Chirurgical Hospital, with 130 beds; Chilren's Hospital, containing 40 beds, and a maternity hospital having 40 beds. In common with other schools the following are used: Philadelphia, Pennsylvania, German, Samaritan, St. Joseph's, St. Agnes', St. Mary's, Methodist and the Philadelphia Lying-in Hospitals. Applicants for matriculation must follow the rules of the Association of American Medical Colleges, to which this school belongs. With laboratories, lecture rooms and amphitheater this college is amply provided and the equipment is good. The work embraces four years of eight months each. Fees: First two years, $140 each; third year, $130, and $100 for the fourth year. The Dean is Dr. Seneca Egbert, 4814 Springfield Ave., Philadelphia. Total enrolment for 1900-1 was 408; graduates, 67. The next session opens October 1, and will close May 24, 1902.

Pittsburg.

WESTERN PENNSYLVANIA MEDICAL COLLEGE.—This is the Medical Department of the Western University of Pennsylvania, and was organized in 1886. The faculty is composed of 29 professors, and 39 associates, assistants, etc., 68 in all. Clinical material for study is furnished by a college dispensary, and the Emma Kaufman Clinic, Reineman Maternity Hospital, Mercy, South Side and

St. John's hospitals. This school is a member of the Association of American Medical Colleges and matriculants must be possessed of acquirement prescribed by that organization. Well-equipped laboratories provide ample facilities for individual work; the lecture-room space is sufficient. The course of study embraces graded work for four years of eight months each. Special attention is given to practical bedside work. The total fees are $130 for each year. The Dean is Dr. J. C. Lange, Pittsburg. Total enrolment for 1900-1 was 338; graduates, 73. The next session begins October 1, and will close May 29, 1902.

SOUTH CAROLINA.

South Carolina, population 1,340,316, has one medical college,

THE MEDICAL COLLEGE OF SOUTH CAROLINA.—This is situated in Charleston, a city of 55,807 people, and was founded as the Medical College of South Carolina in 1823; ten years later it was reorganized under its present title. The faculty is made up of 10 professors and 14 adjuncts, assistants, etc., 24 in all. The clinical facilities are those offered by the City Hospital, where surgical, obstetrical and medical instruction is given. Applicants for matriculation must show by certificate or examination that they possess the education required of second-grade teachers in the public schools. The course covers four years of six months each. The total fees for each of the first two years are $100, and $75 each for the last two. Board and room can be obtained for from $12 to $16 a month. The Dean is Dr. Francis L. Parker, Charleston. Total enrolment for 1900-1 was 95; graduates, 35. The next session opens October 1, 1901, and closes April, 1902.

TENNESSEE.

Tennessee, population 2,020,616, has ten medical colleges. Of these the Medical Department of the University of Nashville, Vanderbilt University Medical Department, University of Tennessee Medical Department, and Meharry Medical College are situated in Nashville, a city with a population of 80,865. The City Hospital, containing 100 beds, is used by all the schools in common for clinical study. Board and lodging cost from $3 to $4 a week. Knoxville, population 32,637, contains two colleges, Tennessee Medical College and Knoxville Medical College. The cost of room and board in that city is from $2.50 to $4 a week. Chattanooga Medical College and Chattanooga National Medical College are situated in Chattanooga, a city of 30,154 people. Board and lodging cost there from $1.50 a week upwards. There is one college, Memphis Hospital Medical College, located in the growing city of Memphis, population 102,320. Good board can be obtained for from $3 to $4 a week. The other school, the Sewanee Medical College, is located at Sewanee, a mountain town of 1200 people.

Nashville.

MEDICAL DEPARTMENT UNIVERSITY OF NASHVILLE.—This school was established in 1850, and has a faculty of 14 professors, and 13 lecturers, assistants, etc., in all 27. This school is a member of the Southern Medical College Association and the requirements for admission prescribed by that organization are enforced. The course of study covers four years of twenty-six weeks each. The total fees for each of the four years are $65. The Dean is Dr. William G. Ewing, Nashville. Total enrolment for 1900-1 was 182; graduates, 66. The next session begins October 1, 1901, and ends April 2 1902.

VANDERBILT UNIVERSITY MEDICAL DEPARTMENT.—This school was founded in 1874, and in 1895, when the present medical building was completed, the course was extended, the standard raised, and the present faculty, consisting of 10 professors and 20 associates, lecturers, etc., appointed. The requirements for admission are those of the Southern Medical College Association, of which this school is a member. The course covers four years of six months each. The total fees for the first three years are $105 each, and $130 for the fourth year. The Dean is Dr. William L. Dudley, Nashville. Total enrolment for 1900-1 was 211; graduates, 92. The next session begins October 1, 1901, and ends April 3, 1902.

UNIVERSITY OF TENNESSEE MEDICAL DEPARTMENT.—This was organized in 1876 as the Nashville Medical College; its present relations, as Medical Department of the University of Tennessee, were assumed in 1879. The faculty is composed of 14 professors, and 13 lecturers, assistants, etc., 27 in all. The requirements for admission are those of the Southern Medical College Association, of which this school is a member. The course of study includes work for four years of six months each. The total fees for each of the first two years are $100; third year, $90, and $115 for the fourth year. The Dean is Dr. Paul F. Eve, 614 Broad St., Nashville. Total enrolment for 1900-1 was 182; graduates, 75. The next session begins October 1, 1901, and ends April, 1902.

MEHARRY MEDICAL COLLEGE OF WALDEN UNIVERSITY.—Colored. This school was organized in 1876 as the Medical Department of Central Tennessee College, now Walden University, "for the purpose of furnishing to the colored people of the South an opportunity obtaining a medical education." The faculty is made up of 9 professors, and 11 instructors, demonstrators, etc., 20 in all. This school is a member of the Association of American Medical Colleges, and the requirements for admission are those prescribed by that Association. The work embraces a four-year graded course, six months to the year. The total fees for the first three years are $40 each, and $50 for the fourth year. The Dean is Dr. G. W. Hubbard, Nashville. Total registration for 1900-1 was 217; graduates, 39. The twenty-fifth session begins September 21.

Knoxville.

TENNESSEE MEDICAL COLLEGE.—This school was organized in 1889, and has a faculty of 13 professors and 6 assistants, 19 in all. A college hospital and a free dispensary supply material for a study of clinical cases. This school is a member of the Southern Medical College Association, and the requirements for admission are those prescribed by that Association. The curriculum includes graded work for four years of six months each. Fees: First year, $75; second, $70; third, $67.50, and $94 for the fourth year. The Secretary is Dr. Henry J. Kelso, Knoxville. Total number of students for 1900-1 was 97; graduates, 35. The thirteenth session begins October 1, 1901, and closes April 1, 1902.

KNOXVILLE MEDICAL COLLEGE.—Colored. This school was established in 1900 following the discontinuance of the Medical Department of Knoxville College, organized in 1895. The teaching force comprises 11 professors. The City Hospital and a college dispensary supply clinical material. Applicants for admission not possessing a certificate of the necessary educational requirements "must pass a satisfactory examination." The catalogue says that the course covers four years of six months each. Fees: First year, $42; second, $37; third, $30, and $40 for the fourth year. The Dean is Dr. E. L. Randall, Knoxville. Total number of students for 1900-1 was 34; graduates, 4. The next session opens December 4, 1901, and closes May 30, 1902.

Chattanooga.

CHATTANOOGA MEDICAL COLLEGE.—This is the Medical Department of Grant University and was organized in 1889. The faculty is made up of 12 professors, and 22 demonstrators, instructors, etc., in all 34. Erlanger Hospital and a free college dispensary supply material for a clinical study of cases. The catalogue says that before an applicant for graduation can matriculate he must present a certificate showing that he is possessed of scholastic attainments equal to those required for a first-grade teacher in the public schools. The course of work covers four years of six months each and is graded. The total fees for the first, third and fourth years are $75 each, and $85 for the second year. The Dean is Dr. E. A. Cobleigh, Chattanooga. Total enrolment for 1900-1 was 224; graduates, 54. The thirteenth session begins October 7, 1901, and ends April 15, 1902.

CHATTANOOGA NATIONAL MEDICAL COLLEGE.—Colored. This was chartered in 1899 and shows a teaching force of 9. "The college has a large lecture room, two recitation rooms, one dissecting and a large pharmaceutical room." The catalogue claims that the course covers four years of seven months each. Total fees are $50 each year, with an additional graduation fee of $20. Total enrolment for 1900-1 was 20; graduates, 2.

It was the presentation of a diploma from this school, for a license to practice, in connection with other facts, that convinced the legislature of Tennessee of the necessity of state control. Hereafter all who expect to practice in that state must stand a state examination except matriculates of Tennessee colleges who graduate before July, 1902.

Memphis.

MEMPHIS HOSPITAL MEDICAL COLLEGE.—This school was organized in 1878, and has a faculty composed of 10 professors and 15 assistants, 25 in all. Good clinical facilities are furnished by St. Joseph's Hospital, the City Hospital, with 200 beds, and a college dispensary. It is a member of the Southern Medical College Association. The course includes graded work for four years of six months each; "this, however, applies only to students who matriculated for the first time on or after January 1, 1899." With the addition of a large new building, ample laboratory and lecture-room space is afforded; facilities for practical laboratory work, in connection with the study of clinical cases, have also been added. The total fees for the first two years are $75 each, and $105 for the last two. The Dean is Dr. W. B. Rogers, Memphis. Total registration for 1900-1 was 750; graduates, 189. The twenty-second session begins November 1, 1901, and ends April, 1902.

HANNIBAL MEDICAL COLLEGE.—Colored. Some twenty years ago there was chartered under the laws of Tennessee an organization under this name, but there never has been an attempt to carry on regular lectures. Diplomas have been issued at various times, but always to negroes. It is thought that the recently enacted state law, compelling an examination, will abolish this practice.

Sewanee.

SEWANEE MEDICAL COLLEGE.—This is a three-year school and is the Medical Department of the University of the South. It was organized in 1891 and has a faculty of 7 professors, and 14 associates, lecturers, etc., 21 in all. The requirements for admission are those of the Southern Medical College Association, of which this school is a member. The course covers three years of six months each, but the catalogue says that after 1902 four years will be required. The fees are $65 for each of the first two years, and $90 for the last year. The Dean is Dr. John S. Cain, Sewanee. Total enrolment for 1900-1 was 207; graduates, 102. The tenth session commenced July 3, 1901, and will close January 1, 1902.

TEXAS.

Texas, population 3,048,710, has four medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 37,789 inhabitants. Good board and room can be procured for from $15 to $20 a month. The Medical Department of Fort Worth University is at Fort Worth, population 26,888. The cost of board and room in that city is from $12 to $15 a month. The other two colleges, University of Dallas Medical Department and Dallas Medical College, are situated in Dallas, population 42,638.

Galveston.

UNIVERSITY OF TEXAS MEDICAL DEPARTMENT.—This department of the State University was organized in 1891, and has a faculty

of 9 professors, and 15 lecturers, assistants, etc., a total of 24. The John Sealy Hospital, also having an outdoor department, and St. Mary's Infirmary supply good material for clinical study. The requirements for admission are proof, either by certificate or examination, that the candidate is sufficiently proficient in English, including grammar, composition and rhetoric; mathematics, through plane geometry and algebra including quadratics, and general history. The curriculum embraces graded work for four years of eight months each. Fees, to residents of the state: First year, $50; second, $20; third, $15, and $5 for the fourth year. Non-residents of the state are required to pay an additional fee of $50 each year. The Dean is Dr. Henry P. Cooke, Galveston. Total registration for 1900-1 was 119; graduates, 6. The next session begins October 1, 1901, and ends June 1, 1902.

Fort Worth.

MEDICAL DEPARTMENT FORT WORTH UNIVERSITY.—This school was organized in 1894, and has a faculty of 17 professors, and 14 lecturers, assistants, etc., in all 31. Clinical facilities are supplied by St. Joseph's Hospital, with 200 beds; the Benevolent Home, containing 75 beds; the Delia Collins' Rescue Home, having 50 beds, and a college dispensary. The requirements for admission are those of the Southern Medical College Association, of which this school is a member. Instruction is carried on by laboratory, didactic and clinical study. The course covers four years of six months each. The total fees for each of the first three years are $75, and $100 for the fourth year.. The Dean is Dr. Bacon Saunders, Fort Worth. Total enrolment for 1900-1 was 157; graduates, 27. The next session opens October 1, 1901, and closes April 3, 1902.

Dallas.

UNIVERSITY OF DALLAS MEDICAL DEPARTMENT.—This school has but completed its first year. The faculty shows a teaching force of 23. Parkland Hospital, with 90 beds; St. Paul's Sanitarium and a college dispensary are utilized for clinical study. Applicants for admission not possessing a certificate of sufficient work done, "must pass a satisfactory examination before a committee of the faculty." The course covers four years of six months each. The fees are $75 for each of the four years, with a matriculation fee of $5, and a graduation fee of $25, each paid but once. The Dean is Dr. Charles M. Rosser, Dallas. Total registration for 1900-1 was 81; graduates, 15. The second session opens October 1, 1901, and closes April 1, 1902.

DALLAS MEDICAL COLLEGE.—This school has also completed but one year of its existence, recently becoming the Medical Department of Trinity University. The catalogue shows a faculty of 18, and requires four years of six months each for the graduation of all who matriculated after January 1, 1899. The City Hospital, Polyclinic Infirmary and a college dispensary supply clinical material. The requirements for admission claimed are those of the Association of American Medical Colleges, but this school is not a member. Fees: $75 each year for general fee; matriculation fee, $5, and $25 for graduation. The Dean is Dr. Jesse B. Titterington, Dallas. Total enrolment for 1900-1 was 51; graduates, 8. The second session begins October 28, 1901, and ends April 30, 1902.

VERMONT.

Vermont, population 343,641, has one medical school,

MEDICAL DEPARTMENT UNIVERSITY OF VERMONT.—This school is located at Burlington, a town of 18,640 people; it was organized in 1822, but suspended from 1836 until 1854, when it was reorganized. The faculty consists of 20 professors, and 14 adjuncts, instructors, etc., in all 39. The Mary Fletcher Hospital and a free dispensary furnish material for clinical instruction. Applicants for admission must show by certificate or examination sufficient knowledge of the following: English, including grammar, orthography and composition; geography, United States history, arithmetic and elementary physics. The laboratory and lecture room space and equipment are good. The course of study embraces graded work for four years of six months each. The total fees for each of the first three years are $115, and $114 for the fourth year. Board and room costs from $3.50 to $5 a week. The Secretary is Dr. B. J. Andrews, Burlington. Total registration of students for 1900-1 was 155; graduates, 15. The forty-ninth session begins January 2, 1902, and ends June 25, 1902.

VIRGINIA.

Virginia, population 1,854,184, has three medical colleges. The University of Virginia Department of Medicine is situated in Charlotteville, having a population of 6449. Board and room can be obtained at that place for $18 a month and upwards. The other two colleges, Medical College of Virginia and University College of Medicine, are located at Richmond, a city of 85,050 inhabitants. The clinical facilities are good and board and room can be obtained there for from $12 to $20 a month.

UNIVERSITY OF VIRGINIA MEDICAL DEPARTMENT.—This school was organized in 1825, and has a faculty of 7 professors, and 10 lecturers, instructors, etc., in all 17. A free dispensary furnishes clinical facilities for the present, but the new four-story hospital, now almost completed will add greatly in that direction. The requirements for admission claimed are those of the Association of American Medical Colleges, but this school is not a member of that Association. The course of study embraces four years of nine months each. Fees: First year, $110; second, $100; third, $80, and $60 for the fourth year. Total enrolment for 1900-1 was 173; graduates, 53. The seventy-seventh session opened September 15, and will close June 18, 1902.

MEDICAL COLLEGE OF VIRGINIA.—This school was organized in 1838 as the Medical Department of Hampden Sidney College, and in 1854 the present name was assumed. The faculty is made up of 15 professors, and 20 lecturers, instructors, etc., a total of 35. Clinical material is furnished by the Old Dominion Hospital, Maternity Hospital, and the City Dispensary; an outside obstetric department also furnishes opportunities for clinical work. This school is a member of the Southern Medical College Association, and the requirements for admission are those determined by that Association. The buildings are large and contain well equipped laboratories and amphitheaters. The course embraces four years of seven months each. The fees are $65 for each year, with an additional graduation fee of $30. The Dean is Dr. Christopher Tompkins, Richmond. Total registration for 1900-1 was 203; graduates, 47. The next session begins October 1, 1901, and will end May 3, 1902.

UNIVERSITY COLLEGE OF MEDICINE.—This school was organized in 1893 and has a faculty of 17 professors, 32 lecturers, assistants, etc., a total of 49. Good clinical facilities are furnished by Virginia Hospital, with a maternity department and annex which was built especially for the purpose of affording clinical instruction; Richmond Eye, Ear and Throat Infirmary, containing 34 beds; the City Hospital, and a college dispensary. Applicants for matriculation must show by certificate or examination to be possessed of a certain proficiency in English, mathematics and Latin. The laboratory and lecture-room space and equipment are ample. The curriculum covers four years of seven months each. The total fees are $85 for each year. The Dean is Dr. J. Allison Hodges, Richmond. Total enrolment for 1900-1 was 224; graduates, 72. The next session begins October 1, 1901, and ends May 15, 1902.

WISCONSIN.

Wisconsin, population 2,069,042, has two medical colleges, the Milwaukee Medical College and Wisconsin College of Physicians and Surgeons. They are both situated in Milwaukee, a city of 285,315 people. Clinical facilities are furnished them in common by the County Hospital, with 175 beds, and the Milwaukee Hospital for the Insane. Board and lodging can be had for from $3 to $5 a week.

MILWAUKEE MEDICAL COLLEGE.—This school was organized in 1893, and has a faculty of 22 professors, 7 associates, and 28 lecturers, instructors, etc., a total of 57. Good clinical material is furnished by Trinity, St. Mary's, and the County hospitals, Milwaukee Hospital for the Insane, and a college dispensary. This school is a member of the Association of American Medical Colleges, and the requirements for admission are those specified by that body. Ample laboratory and amphitheater facilities are afforded. The course covers four years of seven months each. The total fees are $60 each for the first three years, and $70 for the fourth year. The Dean is Dr. William H. Earles, Milwaukee. Total number of students for 1900-1 was 178; graduates, 36. The eighth session began September 18, and will close April 15, 1902.

WISCONSIN COLLEGE OF PHYSICIANS AND SURGEONS.—This college was organized in 1893, and has a faculty composed of 24 professors, and 22 associates, assistants, etc., a total of 46. St. Joseph's Hospital, containing 150 beds; Wisconsin Maternity Hospital, a college dispensary and the material used in common with the other school supply ample facilities for clinical study. The requirements for admission are those of the Association of American Medical Colleges, of which this school is a member. The laboratories and lecture rooms are well equipped. The curriculum includes work for four years, seven and one-half months constituting a year. Fees: Matriculation, paid once, $5; general ticket for each semester, $40; for the use of microscope, a fee of $2 is charged for each course. The Secretary is Dr. J. A. Bach, Milwaukee. Total enrolment for 1900-1 was 123; graduates, 18. The next session begins September 24, 1901, and ends May 13, 1902.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

Regarding the requirements for admission to be maintained by colleges belonging to this Association. They are as follows:

SECTION 1.—Each college holding membership in this Association shall require of each student, *before admission* to its course of study, an examination, the minimum of which shall be as follows:

1. In *English*, a composition on some subject of general interest. This composition must be written by the student at the time of the examination, and should contain at least 200 words. It should be criticised in relation to thought, construction, punctuation, spelling and handwriting.

2. In *Arithmetic*, such questions as will show a thorough knowledge of common and decimal fractions, compound numbers, and ratio and proportion.

3. In *Algebra*, such questions as will bring out the student's knowledge of the fundamental operations, factoring, and simple quadratic equations.

4. In *Physics*, such questions as will discover the student's understanding of the elements of mechanics, hydrostatics, hydraulics, optics, and acoustics.

5. In *Latin*, an examination upon such elementary work as the student may offer, showing a familiarity usually attained by one year of study; for example, the reading of the first 15 chapters of Cæsar's Commentaries, and the translation into Latin of easy English sentences involving the same vocabulary.

SEC. 2.—In place of this examination, or any part of it, colleges, members of this Association, are at liberty to recognize the official *certificates of reputable* literary and scientific colleges, academies, high schools, and normal schools, and also the medical student's certificate issued by any state examining board covering the work of the foregoing entrance examination.

SEC. 3.—Colleges, members of this Association, may allow students *who fail in one or more branches* in this entrance examination the privilege of entering the first-year course, but such students shall not be allowed to begin the second course until the entrance requirements are satisfied.

SEC. 4.—Colleges, members of this Association, are free to honor official *credentials issued by medical colleges of equal requirements*, except in the branches of study embraced in the last year of their own curriculum.

SEC. 5.—Candidates for the degree of Doctor of Medicine in the year 1899 and thereafter shall have attended at least *four courses*

Name of College.	Population of city in which coll. is located.	No. students registered, Session 1900-1.	Graduates, 1901.	Total No. of teachers.	No. of weeks in college year.	Total graduates all colleges in state, 1901.	Total students, all colleges in state, 1900-1.	Population of state.	No. of physicians in the state.	No. of population to one physician.
ALABAMA						53	207	1,828,697	2000	914
Birmingham Medical College.—R	38,469	77	15	26	27					
Medical College of Alabama.—R	"	130	38	20	26					
ARKANSAS						20	240	1,311,564	2400	546
Medical Department Arkansas University.—R	38,307	240	20	21	26					
CALIFORNIA						128	678	1,311,564	2400	416
California Medical College.—E	342,782	49	10	28	32					
College of Physicians and Surgeons, San Francisco.—R	"	171	38	36	26					
Cooper Medical College.—R	"	167	27	30	32					
Hahnemann Hospital College of San Francisco.—H	"	40	6	28	28					
University of California, Medical Department.—R	"	164	28	40	32					
Pacific Coast Regular College of Medicine.[1]—R	"									
College of Medicine, University of Southern California.—R	102,479	87	19	31	36					
COLORADO						49	248	539,700	1300	415
Colorado School of Medicine.—R	6,150	70	9	25	36					
Denver Homeopathic College.—H	133,859	40	5	31	27					
Gross Medical College.—R	"	78	15	44	36					
Denver College of Medicine.—R	"	60	20	46	34					
CONNECTICUT						18	133	908,420	1550	585
Yale University, Medical Department.—R	108,027	133	18	53	38					
DISTRICT OF COLUMBIA						77	547	278,718	1000	271
Howard University, Medical Department.[8]—R	278,718	142	19	25	30					
Medical Department, Columbian University.—R	"	249	26	52	32					
National University Medical Department.—R	"	33	11	41	34					
University of Georgetown School of Medicine.—R	"	123	21	49	35					
GEORGIA						118	444	2,216,331	3200	692
Atlanta College of Physicians and Surgeons.—R	89,872	282	67	31	26					
Georgia College of Eclectic Medicine and Surgery.—E	"	55	21	12	26					
Medical College of Georgia.—R	39,441	107	30	20	26					
ILLINOIS						736	3662	4,821,550	8600	561
American Medical Missionary College.—R	1,698,575	119	13	21	36					
Bennett College of Eclectic Medicine and Surgery.—E	"	124	37	29	26					
Chicago Homeopathic Medical College.—H	"	152	48	57	28					
College of Medicine and Surgery.—Ph.M	"	46	9	31	28					
College of Physicians and Surgeons, Chicago.—R	"	676	164	115	39					
Dunham Medical College.—H	"	122	18	39	28					
Hahnemann Medical College and Hospital.—H	"	175	51	49	36					
Harvey Medical College.—R	"	270	17	[2]47	40					
Hering Medical College.—H	"	60	12	36	28					
Illinois Medical College.—R	"	202	36	39	26					
Jenner Medical College.—R	"	101	13	[2]32	42					
Northwestern University Medical School.—R	"	344	74	86	36					
Rush Medical College.—R	"	1055	213	124	36					
Northwestern University Woman's Medical School.—R	"	72	19	52	39					
National Medical University[7]	"	144	12	61	36					
Chicago Eclectic College.[9]—E										
INDIANA						82	423	2,516,462	5100	493
Central College of Physicians and Surgeons.—R	169,164	87	23	43	26					
Curtis Physio-Medical Institute[1]	"									
Medical College of Indiana.—R	"	253	46	57	28					
Physio-Medical College of Indiana.—Ph.M	"	34	9	29	26					
Eclectic Medical College of Indiana.—E	"	14	0	22	26					
Fort Wayne College of Medicine.—R	45,115	35	4	31	26					
IOWA						121	708	2,231,853	3700	603
Keokuk Medical College of Physicians and Surgeons.—R	14,641	247	51	15	28					
Iowa College of Physicians and Surgeons.—R	62,139	78	14	23	38					
Sioux City College of Medicine.—R	33,111	52	5	15	33					
State University of Iowa, Homeopathic Medical Dept.—H	7,987	59	16	[3]19	38					
State University of Iowa, Medical Department.—R	"	272	35	[3]31	38					
KANSAS						31	232	1,470,495	2650	555
College of Physicians and Surgeons of Kansas City.—R	51,418	87	31	37	28					
Kansas Medical College.—R	33,608	98	0	33	26					
School of Medicine, University of Kansas[4].—R		47		[3]18	36					
KENTUCKY						190	1266	2,147,174	3900	551
Hospital College of Medicine.—R	204,731	334	52	41	26					
Kentucky School of Medicine.—R	"	309	43	36	26					
Louisville Medical College.—R	"	196	25	23	26					
Louisville National Medical College.[5]—R	"	21	4	15	26					
Southwestern Homeopathic Medical College.—H	"	33	11	31	28					
Medical Department, University of Louisville.—R	"	157	35	37	26					
Kentucky University, Medical Department.—R	"	204	20	35	25					
Medical Department, State University[5].—R	"	12		8	26					
LOUISIANA						116	422	1,381,625	1400	987
New Orleans University, Medical Department.[5]—R	287,104	32	2	9	26					
Tulane University, Medical Department.—R	"	390	114	24	26					
MAINE						40	90	694,466	1250	556
Medical School of Maine, Bowdoin College.—R	5,210	90	40	18	26					
MARYLAND						358	1611	1,188,044	2100	566
Baltimore Medical College.—R	508,957	507	97	45	28					
Baltimore University School of Medicine.—R	"	66	31	28	26					
College of Physicians and Surgeons of Baltimore.—R	"	359	59	52	28					
Medical Department, Johns Hopkins University.—R	"	209	54	64	32					
Southern Homeopathic Medical College.—H	"	32	10	39	28					
University of Maryland, School of Medicine.—R	"	332	71	59	28					
Woman's Medical College of Baltimore.—R	"	31	7	27	32					
Maryland Medical College.—R	"	75	29	25	26					
MASSACHUSETTS						184	1122	2,805,346	6200	452
Boston University School of Medicine.—H	560,892	127	24	58	32					
College of Physicians and Surgeons.—R	"	127	9	33	32					
Harvard University Medical School.—R	"	591	116	31	36					
Tufts' College Medical School.—R	"	277	35	53	32					
MICHIGAN						206	1119	2,420,982	4573	529
Detroit College of Medicine.—R	285,704	224	45	95	28					
Detroit Homeopathic Medical College.—H	"	41	4	33	28					
Michigan College of Medicine and Surgery.—R	"	75	25	23	28					
Grand Rapids Medical College.—R	87,565	47	17	31	26					
Saginaw Valley Medical College.—R	42,345	102	24	30	32					
University of of Michigan Dept. of Medicine and Surgery.—R	14,590	563	75	66	36					
University of Michigan Homeopathic Medical College.—H	"	67	16	11	36					

Name of College.	Population of city in which coll. is located.	No. students registered, Session 1900-1.	Graduates, 1901.	Total No. of teachers.	No. of weeks in college year.	Total graduates all colleges in state, 1901.	Total students, all colleges in state, 1900-1.	Population of state.	No. of physicians in the state.	No. of population to one physician.
MINNESOTA						89	480	1,751,394	1745	1004
College of Homeopathic Med. and Surg., Univ. of Minn.—H	202,718	26	4	22	34					
College of Medicine and Surgery, Univ. of Minnesota.—R	"	323	60	77	36					
Medical Department of Hamline University.—R	"	131	25	45	36					
MISSOURI						525	2300	3,106,665	6125	507
Medico-Chirurgical College.—R	163,752	117	25	46	26					
Kansas City Univ. College of Homeo. Med. and Surg.[9] [1]—H	"									
Woman's Medical College.—R	"	23	9	37	28					
University Medical College of Kansas City.—R	"	246	69	56	26					
Kansas City Homeopathic Medical College.[9]—H	"	50	12	32	28					
Kansas City Medical College.—R	"	114	44	31	28					
Eclectic Medical University.—E	"	48	14	20	26					
Central Medical College.—R	102,979	57	2	30	26					
Ensworth Medical College.—R	"	63	8	23	26					
Barnes Medical College.—R	579,238	520	111	44	28					
Marion-Sims-Beaumont College of Medicine.—R	"	366	87	60	28					
St. Louis College of Physicians and Surgeons.—R	"	243	52	44	28					
American Medical College.—E	"	75	16	27	26					
Homeopathic Medical College of Missouri.—H	"	66	11	31	28					
Medical Department, Washington University.—R	"	227	54	56	28					
University of the State of Missouri.—R	5,651	85	11	25	36					
NEBRASKA						62	346	1,066,300	1475	723
Omaha Medical College.—R	102,555	149	23	36	28					
John A. Creighton Medical College.—R	"	123	27	42	32					
Lincoln Medical College of Cotner University.—E	40,169	74	12	25	28					
NEW HAMPSHIRE						27	89	411,588	730	564
Dartmouth Medical College.—R	1,825	89	27	17	26					
NEW YORK						400	2323	7,268,894	12,-	603
Albany Medical College.—R	94,151	142	28	55	26					
College of Physicians and Surgeons.—R	3,437,202	801	149	82	32					
Cornell University Medical College.—R	"	356	26	98	36					
Eclectic Medical College.—E	"	84	12	35	28					
Long Island College Hospital.—R	"	187	41	69	30					
New York Homeopathic Medical College and Hospital.—H	"	107	27	48	28					
New York Medical College and Hospital for Women.—H	"	33	9	43	30					
University and Bellevue Hospital Medical College.—R	"	285	43	113	28					
Syracuse University College of Medicine.—R	108,374	116	19	41	32					
University of Buffalo, Medical Department.—R	352,387	212	46	68	28					
NORTH CAROLINA						9	50	1,893,810	1600	1184
Leonard Medical School.—R	13,643	8	1	8	26					
North Carolina Medical College.—R	904	42	8	6	26					
Medical Department, University of North Carolina[4].—R		[8]								
OHIO						307	1415	4,157,545	8500	489
Western Reserve University Medical College.—R	381,768	133	24	56	32					
Cleveland College of Physicians and Surgeons.—R	"	78	15	57	32					
Cleveland Homeopathic Medical College.—H	"	150	46	45	32					
Eclectic Medical Institute.—E	325,902	141	26	29	28					
Cincinnati College of Medicine and Surgery.—R	"	82	16	37	28					
Laura Memorial Woman's Medical College.—R	"	24	5	26	28					
Medical College of Ohio.—R	"	200	60	41	28					
Pulte Medical College.—H	"	39	5	31	28					
Miami Medical College.—R	"	112	25	34	28					
Ohio Medical University.—R	125,560	228	45	31	28					
Starling Medical College.—R	"	173	32	29	28					
Toledo Medical College.—R	131,822	55	8	34	28					
OREGON						16	91	413,536	887	466
University of Oregon, Medical Department.—R	90,426	64	11	26	26					
Medical Department, Williamette University.—R	4,258	27	5	17	26					
PENNSYLVANIA						495	2486	6,302,115	9526	662
University of Pennsylvania Department of Medicine.—R	1,293,697	565	160	103	32					
Hahnemann Medical College and Hospital.—H	"	264	52	57	30					
Jefferson Medical College.—R	"	736	106	84	32					
Woman's Medical College of Pennsylvania.—R	"	175	37	53	32					
Medico-Chirurgical College of Philadelphia.—R	"	408	67	72	32					
Western Pennsylvania Medical College.—R	321,616	338	73	68	32					
SOUTH CAROLINA						32	95	1,340,316	1194	1123
Medical College of the State of South Carolina.—R	55,807	95	32	24	26					
TENNESSEE						658	2126	2,020,616	3635	556
Tennessee Medical College.—R	32,637	97	35	19	26					
Knoxville Medical College.[5]—R	"	34	4	11	26					
Medical Department University of Nashville.—R	"	182	66	27	26					
Vanderbilt University Medical Department.—R	"	211	92	30	26					
University of Tennessee, Medical Department.—R	80,865	182	75	27	26					
Meharry Medical College.[5]—R	"	217	39	20	26					
Memphis Hospital Medical College.—R	102,320	750	189	25	26					
Sewanee Medical College.—R	1,200	209	102	21	26					
Chattanooga National Medical College.[5]—R	30,154	20	2	9	28					
Chattanooga Medical College.—R	"	224	54	24	26					
TEXAS						56	408	3,048,710	4980	612
Medical Department Fort Worth University.—R	26,688	157	27	31	26					
University of Texas Department of Medicine.—R	37,789	119	6	24	32					
University of Dallas Medical Department.—R	42,638	81	15	23	26					
Dallas Medical College.—R	"	51	8	18	26					
VERMONT						15	155	343,641	750	451
University of Vermont Medical Department.—R	18,640	155	15	39	26					
VIRGINIA						172	600	1,854,184	2200	843
Medical College of Virginia.—R	85,050	203	47	35	30					
University College of Medicine.—R	"	224	72	49	30					
University of Virginia Department of Medicine.—R	6,449	173	53	17	36					
WISCONSIN						54	301	2,069,042	2212	935
Milwaukee Medical College.—R	285,315	178	36	57	30					
Wisconsin College of Physicians and Surgeons.—R	"	123	18	46	32					

[1] No information to be obtained except that such college is in existence.
[2] Some are also teachers in day schools.
[3] Some are in both departments of this university.
[4] Does not grant degrees.
[5] Colored.
[6] Just organized.
[7] Apparently grants any degree.
[8] Could not be ascertained.
[9] Recently consolidated under the name, Hahnemann College of Kansas City.

NAME OF COLLEGE.	Alabama.	Arizona.	Arkansas.	California.	Colorado.	Connecticut.	Delaware.	D'st. Columbia.	Florida.	Georgia.	Idaho.	Illinois.	Indian Ter.	Indiana.	Iowa.	Kansas.	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.
Birmingham Medical College	74	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Medical College of Alabama	117	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..
Med. Dept. Arkansas University	..	..	206	..	..	..	..	..	..	..	..	..	12	..	..	..	..	3	..	..	..
University of California Med. Dept	..	2	..	139	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
Denver Homeopathic College	1	..	2	3	15	..	..	..	..	..	..	2	..	2	2	2	..	..	..	..	..
Gross Medical College	..	..	..	..	49	2	..	..	..	..	..	1	..	..	2	2	2	2	..	..	..
Denver College of Medicine	..	..	1	..	30	3	..	..	..	..	..	2	..	..	1	..	..	..	..	..	..
Yale University Medical Department	..	..	..	..	..	100	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..
Howard University Medical Department	3	..	2	..	..	..	1	22	3	8	..	2	..	3	1	2	1	1	1	5	..
Medical Department Columbian University	..	..	..	..	..	1	..	..	..	4	..	..	..	4	1	1	..	..	..	..	..
University of Georgetown Medical Dept	1	..	..	1	1	1	..	38	1	1	..	3	..	1	1	1	..	1	..	6	..
Atlanta College of Physicians and Surgeons	23	..	3	..	..	..	..	..	15	171	..	..	..	..	..	..	..	6	..	..	..
American Medical Missionary College	..	..	..	8	1	..	..	1	1	..	..	8	..	4	13	1	2	..	..	..	..
Bennett College of Eclectic Med. and Surg	..	..	1	..	..	..	..	..	..	..	..	53	..	18	6	..	2	..	..	..	..
Chicago Homeopathic Medical College	..	..	..	..	..	..	..	..	..	..	..	64	..	13	14	7	2	..	1	..	..
College of Medicine and Surgery	..	..	..	..	..	..	..	..	..	..	..	23	..	..	2	..	..	..	..	..	..
College of P. and S. of Chicago	..	..	3	..	1	..	..	..	1	1	..	322	..	37	99	12	1	..	..	..	..
Dunham Medical College	..	..	..	..	3	1	..	..	2	..	..	70	..	5	7	1	..	..	..	..	..
Hahnemann Med. College and Hospital	..	..	..	1	..	..	1	1	..	..	..	78	..	6	19	4	1	..	1	..	..
Hering Medical College	..	..	..	..	..	..	..	..	..	..	..	19	..	4	2	5	1	..	..	..	..
Illinois Medical College	1	..	..	2	1	..	..	..	..	1	3	57	..	42	6	2	1	3	..	..	..
Northwestern University Medical School	1	..	..	1	4	..	..	..	..	..	..	182	..	14	25	11	1	..	..	..	..
Rush Medical College	2	..	..	8	6	1	..	..	1	1	1	313	..	54	106	30	5	1	..	..	..
Northwestern Univ. Women's Med. College	..	..	1	2	..	..	..	..	..	..	1	37	..	2	7	2	..	..	..	..	..
Medical College of Indiana	..	..	1	..	..	..	..	..	..	..	..	11	..	233	..	1	1	..	..	..	..
Physio-Medical College of Indiana	..	..	..	1	..	..	..	..	..	..	..	3	..	15	2	..	..	..	..	..	..
Keokuk Medical College of Phys. and Surg	..	..	..	1	1	..	..	..	..	..	..	78	..	3	109	6	..	..	..	..	1
Iowa College of Physicians and Surgeons	..	..	..	..	..	..	..	..	..	..	..	..	..	..	72	1	..	..	..	..	..
Sioux City College of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	..	1	39	..	..	..	..	..	..
State Univ. of Iowa Homeo. Med. Dept	..	..	..	..	..	..	..	..	..	..	..	3	..	..	53	..	..	..	..	..	..
State Univ. of Iowa Med. Dept	..	..	..	..	..	..	..	..	..	..	..	10	..	..	249	..	..	..	..	..	..
College of P. and S. of Kansas City	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	65	..	..	..	..	..
Kansas Medical College	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	87	..	..	..	..	..
School of Medicine of Univ. of Kansas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	46	..	..	..	..	..
Hospital College of Medicine	4	..	8	..	..	..	..	..	2	2	..	13	..	43	..	..	207	1	..	..	..
Louisville Medical College	4	..	8	1	1	..	..	..	..	2	..	3	1	27	3	4	58	6	..	..	..
Medical Department State University	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	8	..	..	..	..
S. W. Homeopathic Medical College	1	..	..	..	..	..	..	..	..	..	..	1	..	6	..	..	22	..	..	..	..
Med. Dept. Univ. of Louisville	..	..	4	..	1	..	..	..	1	..	..	3	1	32	..	..	83	..	..	..	1
Kentucky University Med. Dept	3	..	2	1	..	1	..	..	1	6	..	5	1	25	1	3	90	4	..	..	..
New Orleans University Med. Dept	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	20	..	..	..
Tulane University Medical Department	25	12	..	..	..	..	..	..	5	5	..	..	..	..	..	..	2	194	..	..	..
Med. School of Maine at Bowdoin College	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	74	..	8
Baltimore Medical College	5	..	..	..	..	20	4	..	1	3	..	5	..	3	1	..	2	1	23	63	95
Baltimore University School of Medicine	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	1	21	4
College of P. and S. of Baltimore	4	..	..	..	..	8	2	..	2	5	..	..	..	..	..	..	..	..	5	42	28
Med. Dept. Johns Hopkins University	1	..	1	8	..	10	..	6	1	5	..	14	..	3	1	2	5	1	8	41	12
Southern Homeopathic Med. College	..	..	..	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..	..	18	..
University of Maryland School of Medicine	..	..	..	..	..	3	2	1	5	16	..	..	..	..	..	..	1	..	1	146	8
Women's Medical College of Baltimore	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	14
Maryland Medical College	1	..	..	..	1	1	1	..	..	2	..	..	..	..	..	..	..	..	2	12	2
Boston University School of Medicine	1	..	..	..	..	4	1	..	..	..	..	1	..	..	..	..	..	..	6	1	88
College of Physicians and Surgeons	..	..	..	..	..	3	1	..	..	..	..	1	..	..	1	..	..	..	4	..	78
Harvard University Medical School	..	..	..	1	1	8	..	..	..	1	..	5	..	1	5	1	..	..	26	..	471
Tuft's College Medical School	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	10	..	224
Detroit College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	2
Saginaw Valley Medical College	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	1
University of Michigan Dept. of M. and S.	2	..	..	5	2	2	..	..	..	1	..	42	..	21	11	6	1	..	..	..	1
University of Michigan Homeo. Med. Coll	..	..	..	..	..	1	..	..	..	..	..	2	..	4	..	..	..	..	..	..	1
Detroit Homeopathic Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
College of Homeo. M. and S., Univ. of Minn.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Medical Department of Hamline University	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
University of Minnesota College of M. and S.	..	..	3	..	..	..	..	..	..	..	..	..	..	1	10	..	..	..	..	..	..
Medico-Chirurgical College	..	1	1	1	..	..	..	..	..	..	..	1	..	..	3	41	..	2	..	..	..
Woman's Medical College	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	..
Central Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	10	..	..	..	..	..
Barnes Medical College	1	1	19	1	..	..	..	1	..	2	1	102	9	17	27	17	18	1	..	..	..
University Medical College of Kansas City	..	1	1	1	1	..	..	..	..	..	1	5	3	..	6	80	2	..	..	..	..
Kansas City Homeopathic Medical College	..	..	..	1	1	..	..	..	..	..	..	..	..	1	..	20	..	..	..	..	..
Marion-Sims-Beaumont College of Medicine	..	1	11	3	..	..	..	..	1	..	..	94	5	6	12	10	3	3	..	..	1
St. Louis College of Physicians and Surg	..	..	12	1	..	..	..	..	1	..	..	80	1	6	22	1	6	..	..	..	..
American Medical College	..	..	6	..	..	..	..	..	..	..	..	13	..	3	..	3	..	..	..	..	..
Kansas City Medical College	..	1	2	..	..	..	..	..	..	..	..	1	1	..	..	59	..	..	..	..	..
University of the State of Missouri	..	..	1	..	..	..	..	..	..	..	..	4	1	..	3	1	1	..	..	..	1
Medical Department Washington Univ	..	..	11	..	1	..	..	..	1	..	..	56	2	4	2	3	1	2	..	..	..
Eclectic Medical University	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	13	..	..	..	..	..
Omaha Medical College	..	..	..	..	1	..	..	..	..	..	..	2	..	..	35	1	..	..	..	..	..
John A. Creighton Medical College	..	..	..	..	..	..	..	..	..	..	..	2	..	..	28	1	..	..	..	..	..
Union University Albany Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Cornell University Medical College	1	..	..	1	..	8	..	1	..	..	..	1	..	..	1	1	2	1	..	..	..
Eclectic Medical College of New York	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Long Island College Hospital	..	..	..	..	..	4	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..
New York Homeo. Med. Coll. and Hospital	..	..	..	..	..	3	..	..	..	..	..	..	..	1	..	..	1	1	1	..	..
Syracuse University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..
Leonard Medical College	6	..	..	..	..	1	..	..	..	3	..	..	..	..	..	..	..	..	..	1	1
North Carolina Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cincinnati College of Medicine and Surgery	..	..	..	..	..	..	..	..	..	..	..	1	..	3	..	..	8	..	..	..	..
Cleveland College of Physicians and Surg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cleveland Homeopathic Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Eclectic Medical Institute	..	..	1	1	..	..	..	1	1	1	..	10	..	20	1	1	9	..	..	..	..
Laura Memorial Woman's Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	5	..	..	..	..
Medical College of Ohio	1	..	..	..	..	..	..	..	..	..	..	..	..	17	..	3	34	..	..	..	1
Medical Department Western Reserve Univ	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Miami Medical College	..	..	..	..	..	..	..	..	1	..	..	4	..	8	1	..	15	..	..	..	..
Ohio Medical University	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	1	2	..	..	..	1
Pulte Medical College	1	..	..	1	..	1	..	..	..	..	..	..	..	2	..	..	7	..	..	..	..
Starling Medical College	..	..	..	1	..	2	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..
Toledo Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Rush Medical College and College of Physicians and Surgeons, Baltimore, do not give complete list by states.

Michigan.	Minnesota.	Mississippi.	Missouri.	Montana.	Nebraska.	New Hampshire	New Jersey.	New Mexico.	New York.	Nevada.	N. Carolina.	N. Dakota.	Ohio.	Oklahoma.	Oregon.	Pennsylvania.	Rhode Island.	S. Carolina.	S. Dakota.	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	W. Virginia.	Wisconsin.	Wyoming.	Foreign.
1																		1			1								
		1																											
			1																										

Name of College.	Alabama.	Arizona.	Arkansas.	California.	Colorado.	Connecticut.	Delaware.	Dist. Columbia.	Florida.	Georgia.	Idaho.	Illinois.	Indian Ter.	Indiana.	Iowa.	Kansas.	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.
University of Oregon Medical Department	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Williamette University Medical Department	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Department of Medicine University of Penn	4	..	..	4	..	6	6	2	2	1	..	11	..	3	5	4	4	2	11	10	9
Hahnemann Medical College and Hospital	..	..	..	1	2	8	8	2	..	..	..	1	..	1	1	..	..	..	..	9	2
Jefferson Medical College	2	..	6	8	4	7	10	1	1	8	1	10	..	9	9	2	4	2	8	8	30
Western Pennsylvania Medical College	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Woman's Medical College of Pennsylvania	1	..	..	..	2	6	..	2	..	..	..	..	..	1	1	5	2	1	..	1	13
Medico-Chirurgical College of Philadelphia	..	..	..	2	..	5	8	..	..	..	..	..	..	1	2	..	9	..	1	3	5
Medical College of the State of S. Carolina	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..
Chattanooga Medical College	27	..	9	..	1	..	..	..	7	22	1	3	5	1	1	..	2	8	..	..	1
Medical Department Univ. of Tennessee	9	..	2	..	..	..	..	..	1	2	..	4	5	2	..	..	24	3	..	..	..
Meharry Medical College	15	..	11	1	..	1	..	..	10	17	..	6	..	3	..	5	16	3	..	..	..
Memphis Hospital Medical College	45	..	133	..	..	..	..	..	..	2	..	..	14	1	1	..	5	57	..	..	..
Medical Department University of the South	16	..	7	..	..	1	..	..	3	14	..	1	..	..	4	..	3	23	..	..	3
Tennessee Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	9	..	..	..	..
University of Nashville Medical Department	8	..	11	..	..	..	..	..	..	2	..	..	2	3	..	3	9	11	..	..	..
Vanderbilt University Medical Department	23	..	16	2	..	..	..	..	2	4	..	4	..	..	5	..	15	3	2	..	..
Chattanooga National Medical College	3	..	..	..	..	..	..	..	..	9	..	..	..	..	..	..	..	..	..	..	..
Hannibal Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Medical Department Ft. Worth University	..	..	..	..	..	..	..	..	..	..	1	..	7	..	..	..	..	..	..	..	..
Medical Department University of Texas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
University of Dallas Medical Department	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	..	..	..	..	..	..
Dallas Medical College	..	1	..	..	..	1	..	..	..	..	..	..	6	..	..	..	..	..	..	..	..
University of Vermont Medical Department	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	8	..	21
University College of Medicine	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	1	..
University of Virginia Medical Department	..	..	..	2	1	..	..	..	2	2	3	..	..	..	..	1	..	4	1	..	4
Milwaukee Medical College	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	1	..	..	..	..	..
Wisconsin College of Physicians and Surg	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Total	438	20	508	219	123	235	49	81	85	325	14	1860	82	560	1051	599	717	372	199	389	1202

of medical instruction, each course of at least six months' duration, no two courses of which shall have been in the same calendar year.

Sec. 6.—Colleges, members of this Association, are free to give to students who have met the entrance requirements of the Association additional *credit for time* on the four years' course as follows: (*a*) To students having the A.B., B.S., or equivalent *degree* from reputable literary colleges, one year of time; (*b*) To graduates and students of colleges, of *homœopathic or eclectic* medicine, as many years as they attended those colleges, provided they have met the previous requirements of the Association and that they pass an examination in materia medica and therapeutics; (*c*) To graduates of reputable colleges of *dentistry, pharmacy,* and *veterinary* medicine, one year of time.

Sec. 7.—A college not giving the whole four courses of the medical curriculum, and not graduating students, but otherwise eligible, may be admited to membership.

THE SOUTHERN MEDICAL COLLEGE ASSOCIATION.

The following extracts from the Constitution show regulations controlling matriculants and fees:

ARTICLE IV.

Section 1.—Every student, before being matriculated for the first course of medical lectures in any college belonging to this Association, shall be required to possess the following qualifications:

Sec. 2.—He shall hold a certificate from some known reputable physician, showing his moral character and general fitness to enter upon the study of medicine.

Sec. 3.—He must possess a diploma of graduation from some literary or scientific institution of learning, or a certificate from some legally constituted high school, general superintendent of State education, or superintendent of some county board of public education, attesting that he has been regularly examined and is possessed of at least the educational attainments required of first grade teachers of public schools, or a certificate that he has passed the entrance examination to a State University; and a student may be given one month, from the date of his admission, to submit his certificate of qualification.

* Amend Section 2, Article 4.—After the word "certificate" in the first line, insert "duly sworn to."

* Further amend Section 3, Article 4.—After the word "certificate," in the fourth line from the top insert "duly sworn to;" and after the word "University," in the fourth line from the bottom, insert "or other collegiate institution."

Sec. 4.—A set of tickets showing that the holder has attended one full course of medical lectures in any regular and recognized medical college shall be essential for matriculating for a second course of lectures in any college belonging to this Association; and every student prior to matriculating for a third or fourth course of lectures, shall be required to show, by similar evidence, that he has previously taken two or three courses of lectures.

* Amend Section 4, Article 4, by marking the first paragraph "a," and by adding to this paragraph at the end the following: "The minimum per cent. of actual attendance during any session requisite to credit a student with a full course, shall be 80 per cent. of the collegiate course; and a certificate of such attendance, signed by the Dean or Secretary, shall in all instances be promptly furnished by the college so attended." Amend this Section still further by adding paragraph "b," as follows: "Students shall be examined at the end of the first, and every succeeding year, on the studies of the year, and shall be graded. If a student fail on any of the studies of the year he shall not be credited with a full course, but only with the branches that he has passed successfully. He must be examined on every subject upon which he may have passed an unsatisfactory examination, during the ensuing session, at a time determined by the Faculty.

Sec. 5.—The following classes of students may apply for advanced standing and obtain it, provided every applicant undergoes a satisfactory examination upon every branch below the class desired to be entered:

(*a*) Graduates of Dentistry, of Pharmacy, and of Veterinary Medicine.

(*b*) Graduates and matriculates who have completed one or more courses in Colleges of Homeopathy and of Eclectic Medicine.

(*c*) Graduates of recognized colleges and universities who have completed therein prescribed courses in elementary branches of medicine, including chemistry and biology.

* Amend Section 5, Article 4, by adding paragraph "c" as follows: "Any legally qualified non-graduate practitioner of medicine may be admitted into the second year on passing a satisfactory examination on all of the studies of the first year."

Sec. 6.—The same charges shall be made in each of the courses, except where students are exempt from dissection and from laboratory work by reason of having performed the same before, and are not candidates for graduation; and colleges shall enforce and collect their published rates of charges, except in cases deserving reduction on account of the demands of worthy and deserving charity, and such cases shall not exceed 7 per cent. of the whole number of matriculates of the previous session. This law shall not apply to endowed institutions, whose benefactions are confined to their own State; or to colleges receiving State appropriations, or whose charter privileges compel them to give free scholarships to students of their respective States.

The following is recommended as the minimum rate of charges allowable by colleges belonging to this Association:

Matriculation Fee	$5.00
Professors' Tickets	75.00
Anatomical Ticket	10.00
Laboratory Courses, each	10.00
Graduation Fee	25.00

* Amend Section 6, Article 4, by striking out the following: "Except in cases deserving reduction on account of the demands of worthy and deserving charity, and such cases shall not exceed 7 per cent. of the whole number of matriculates of the previous session."

INTERCOLLEGIATE COMMITTEE OF THE AMERICAN INSTITUTE OF HOMEOPATHY.

Under date of Sept. 10, 1901, Dr. George Royal, Secretary of this organization, says: "Every college which secures admission to the Intercollegiate Committee of the American Institute of Homeopathy, must present evidence that they have complied with the requirements of the State Board of Health in their state, or, if there is no such board, then of those of the State Board of the state nearest them. They must show that they teach the principles of similia and agree to be regulated by such rules as the Committee has or may formulate. The following colleges are now in good standing: Denver Homeopathic Medical College; Hahnemann Hospital College, San Francisco; Chicago Homeopathic Medical College; Hering Medical College; Dunham Medical College; Hahnemann Medical College and Hospital, Chicago; Homeopathic Medical Department University of Iowa; Southwestern Homeopathic Medical College, Louisville; Boston University School of Medicine; Southern Homeopathic Medical College, Baltimore; Homeopathic Medical College University of Michigan; Homeopathic Department University of Minnesota; Hahnemann Medical College of Kansas City University; Homeopathic Medical College of Missouri; New York Medical College and Hospital for Women; Pulte Medical College; Cleveland Homeopathic Medical College; Hahnemann Medical College and Hospital, Philadelphia."

* Amendments proposed at the last meeting, but not yet acted upon.

Alabama.	Minnesota.	Mississippi.	Missouri.	Montana.	Nebraska.	N. Hampshire.	New Jersey.	New Mexico.	New York.	Nevada.	N. Carolina.	N. Dakota.	Ohio.	Oklahoma.	Oregon.	Pennsylvania.	Rhode Island.	S. Carolina.	S. Dakota.	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	W. Virginia.	Wisconsin.	Wyoming.	Foreign.
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1	..	1	4	..	1	1	32	..	24	..	5	..	21	..	2	347	6	3	..	2	4	3	1	4	2	3	4	..	16
..	123	..	..	..	1	1	38	..	12	..	..	..	6	..	1	159	..	1	..	..	2	..	..	1	..	..	..	..	4
1	..	1	2	..	2	1	59	..	26	..	7	1	29	..	3	428	1	3	1	1	5	4	1	3	1	9	1	1	13
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1	..	2	1	1	..	1	13	..	13	..	..	..	1	..	..	89	..	1	..	..	..	..	2	4	..	1	1	..	9
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1	..	8	1	1	..	..	..	..	1	..	21	..	3	..	..	1	..	5	..	63	23	1	..	3	..	3	1	..	..
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..	..	33	11	..	1	..	..	..	..	..	2	..	3	1	..	1	..	9	..	46	16	..	..	..	..	..	1	..	5
1	..	205	17	..	..	..	..	..	..	..	1	..	..	4	..	..	..	4	..	86	174	..	..	..	..	..	..	..	..
..	..	19	2	..	..	..	6	..	5	..	11	..	3	1	..	8	..	12	1	26	14	..	..	18	..	2	..	..	6
1	..	..	..	..	..	..	..	..	..	..	23	..	1	..	..	..	..	..	..	59	..	..	..	3	..	..	..	..	..
..	..	34	..	..	..	..	..	..	..	..	7	..	..	..	..	..	..	2	..	66	18	..	..	..	1	4	..	..	1
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1	..	..	3	1	..	..	1	2	..	4	..	4	...	..	..	..	1	..	3	4	..	8	..	..	112	1	3	..	1
4	2	1	..	..	..	..	..	..	1	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	162	..	1
..	122	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	122	..	..
745	525	478	1192	43	289	113	331	5	1286	6	290	62	1392	66	102	2098	88	238	61	580	980	46	135	326	162	191	682	10	404

NOTES.

The population given of both city and state is that of the last United States census (1890).

In estimating the time necessary to complete a course of study, the number of weeks in the table should be multiplied by four, except for the three-year schools.

There are but two colleges in the country that do not claim a four-year course, these being the North Carolina Medical College and the Sewanee (Tenn.) Medical College.

Last year an attempt was made by THE JOURNAL to cover the ground in the same manner as has been done this year, but at that time without success as regards certain of the statistics, and that special number was therefore given up. The number of graduates for the school year 1899-1900, however, were obtained, correctly we believe, and were as follows according to states:

Alabama, 56; Arkansas, 8; California, 146; Colorado, 44; Connecticut, 24; District of Columbia, 78; Georgia, 153; Illinois, 681; Indiana, 62; Iowa, 91; Kansas, 49; Kentucky, 166; Louisiana, 118; Maine, 32; Maryland, 262; Massachusetts, 212; Michigan, 228; Minnesota, 69; Missouri, 501; Nebraska, 38; New Hampshire, 30; New York, 436; North Carolina, 20; Ohio, 315; Oregon, 16; Pennsylvania, 502; South Carolina, 43; Tennessee, 600; Texas, 40; Vermont, 40; Virginia, 140; Wisconsin, 39. A total of 5239.

About fifteen colleges were not included in the above, but at the outside these did not graduate over one hundred men and possibly not half that number. We estimate seventy-five and believe this is within fifteen of being correct. This number added would make the total number of graduates for last year (1900) 5314, against 5444 for this year.

There were 23,846 students registered at the regular colleges during the year ending July 1, 1901; 1683 at the homeopathic; 664 at the eclectic, and 224 at the physio-medical and nondescript—a total of 26,417.

There were 4879 graduates from the regular colleges; 387 from the homeopathic; 148 from the eclectic, and 30 from the physio-medical and nondescript—total M.D. degrees conferred during the year, 5444.

There are in all 5,958 teachers in the medical schools of this country.

There are 10 medical colleges located in towns of less than 10,000 inhabitants; 24 in towns between 10,000 and 50,000; 11 in towns between 50,000 and 100,000; 36 in towns between 100,000 and 250,000; 28 in towns between 250,000 and 500,000, and 45 in towns of more than 500,000 inhabitants.

The following states and territories have no medical colleges: Arizona, population 122,931; Delaware, 184,735; Florida, 528,542; Idaho, 161,772; Indian Territory, 392,060; Mississippi, 1,551,270; Montana, 243,329; New Jersey, 1,883,669; New Mexico, 195,310; Nevada, 42, 335; North Dakota, 319,146; Oklahoma, 398,331; Rhode Island, 428,556; South Dakota, 401,570; Utah, 276,749; Washington, 518,103; West Virginia, 958,800, and Wyoming, population 92,531.

In the Table indicating homes of students, those marked foreign include Canadians. This will explain the number in the "foreign" column, in certain colleges located near the border; for instance, Detroit College of Medicine registers fifty students from the Province of Ontario, and Saginaw Valley Medical College has fourteen students registered from the same province.

CANADA.

The Dominion of Canada, with a population of 5,335,055, distributed through seven provinces and the Northwest territories, an area which reaches from the Atlantic to the Pacific, contains only 12 medical colleges. Of these, 5 are situated in Ontario, 4 in the province of Quebec, 2 in Nova Scotia, and one in Manitoba. One of the five colleges in Ontario is merely a teaching body; it does not confer degrees, since it is not in affiliation with any university. The distinction between university and college in Canada is definite, namely, the latter is a teaching body only and has no right to grant a degree. The

announcements of the following institutions were not received: 1, Faculty of Medicine, Queen's University, Kingston, Ont., and 2, Manitoba Medical College, affiliated with the University of Manitoba. The course of the latter is four years of eight months each.

Toronto, Ontario.

UNIVERSITY OF TORONTO, MEDICAL FACULTY.—All the lectures and demonstrations of the 1st and 2d years are given in the laboratories and lecture rooms of the University; more than two-thirds of the instruction in the 3d and 4th years are given in the wards and in the pathological and clinical laboratories. A 5th year is now demanded by the Ontario Medical Council, for which provision will be made. Clinical instruction is given in the Toronto General Hospital, Mercer Eye and Ear Infirmary, Burnside Lying-in Hospital, Hospital for Sick Children, and St. Michael's Hospital. Before commencing students must satisfy, as to qualifications, the College of Physicians and Surgeons of Ontario (Provincial Board). Fees are: Registration (payable once), $5; each of the first four years, $100; fifth year, $50; for the degree of M.B., and M.D., each $20. Number of students registered last session, 339; graduates, 52. The 15th session, since the re-establishment of the Medical Faculty of the University, will commence October 1.

TRINITY MEDICAL COLLEGE.—This college is in affiliation with Trinity University, the University of Toronto, Queen's University, and the University of Manitoba. It is situated in Toronto. Toronto General Hospital, Hospital for Sick Children, St. Michael's Hospital, Burnside Lying-in Hospital, and the Eye and Ear Hospital are open to the students for clinical instruction. The entering candidate must pass the examination required by the Provincial College of Physicians and Surgeons. The fee for each session of eight months is $100, exclusive of fees for examinations and hospitals. Matriculates during last session were 157; graduates, 37. The 31st "consecutive winter session" will begin September 25, and continue for eight months.

ONTARIO MEDICAL COLLEGE FOR WOMEN.—This college is located in Toronto, and is not empowered to grant degrees in Medicine, but it qualifies students fully to take the examinations in any University. The college requires no certificate of matriculation examination, but will accept that of the university selected by the student. The fee for each year is $100, exclusive of all hospital and university fees. The number of undergraduates last session was 339; graduates, 52. The 18th session will open Septembr 17 and continues for eight months.

London, Ontario.

MEDICAL DEPARTMENT OF THE WESTERN UNIVERSITY.—This college makes use of Victoria Hospital for its clinical work. The fee each year is $90, and $25 for graduation. The requirements for matriculation are those demanded by the College of Physicians and Surgeons of Ontario, and the full course is one of 5 years. The matriculates of last session were 77; graduates, 13. The 20th session opened September 10.

Montreal, Quebec.

UNIVERSITY OF BISHOPS COLLEGE, FACULTY OF MEDICINE.—The course leading to the degree of C.M., M.D., extends over four years and consists of 4 sessions of six months each, and three summer sessions of three months each, only one of which is compulsory; the faculty strongly recommends attendance upon the three summer courses. Students who require the Quebec license will be given an extended course to comply with the provincial laws. The Montreal General Hospital, Royal Victoria, Western Hospital, Hotel Dieu Hospital and Women's Hospital afford opportunities for clinical instruction. Students must, on commencing, satisfy the Provincial Board as to their preliminary qualifications. The fee for the first year is $81; second year, $84; third year, $86; fourth year, $74, and summer course, $25, and degrees, $25. During last session the students numbered 106. The 31st annual session will commence October 1.

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—This college has a course of four years of nine months each. The total fees for the course are $500. Clinical instruction is given in the Montreal General Hospital, Royal Victoria Hospital, and Montreal Maternity Hospital. Students, except university graduates in arts, must pass the preliminary examination required by the Provincial College of Physicians and Surgeons. Last year's matriculates numbered 490; graduates, 106; post-graduate students, 23. The 70th session will commence September 23.

ECOLE DE MEDECINE ET DU CHIRURGIE.—This college is the Montreal branch of the Medical Faculty of the Universite-Laval in Quebec. It is a French school and was incorporated in 1845. Its students in all classes now number from 280 to 300 each year.

Quebec, P. Q.

UNIVERSITE LAVAL, FACULTE DE MEDECINE.—The course consists of four years. The fees for the entire course are $180 and $216, according to preliminary qualifications. The matriculates during last session were 102; graduates, 24.

Halifax, Nova Scotia.

FACULTY OF MEDICINE OF DALHOUSE UNIVERSITY.—The course consists of 4 years of 8 months each, and leads to the final M.D. and C.M. examination. Prospective students must pass the preliminary examination of the Provincial Medical Board or a university examination. During last session there were 95 students, of which 14 belonged to the graduating class.

HALIFAX MEDICAL COLLEGE.—This college supplies no "preliminary examiners;" students are referred for examination to the Registrar of the Provincial Medical Board. The course consists of four years of eight months each. The fees for the full course are $300, and $30 for graduation. During last session the students numbered 88; graduates, 12. The 33d session began August 29.

Six Years' Course for the Degree in Arts and in Medicines.—As the number of subjects about which it is necessary for the student to know something has increased during the past years the medical course has gradually been lengthened, the demands upon the student have been greater and the average age at which men enter practice has continually increased. This state of affairs has given rise to a considerable discussion as to whether it is advisable for a young man intending to study medicine to take a preliminary course in arts or sciences. The requirement of such degrees as a condition for entrance at Harvard and Johns Hopkins is sufficient evidence that some of the most progressive and representative members of our profession consider such a course of study not only advisable but indispensable. The poor quality of instruction in our secondary schools is no doubt responsible for the delay of students in entering college, and this has made the average age very high for the student who graduates from both a collegiate and medical course. With improvement in secondary education this state of affairs will be remedied and students will be able to enter upon their professional work at a reasonable age. At present the requirement of the degree in arts and science with a four years' course in medicine is considered too high by many, and various solutions of the problem have been suggested. Certain schools have given credit to graduates in arts and science for studies with a medical bearing taken during their academic courses. Other schools have sought to arrange a schedule of studies which shall give a reasonably complete liberal education in connection with a medical course in a shorter length of time than has been previously customary. Within the past year we have noticed from the announcements of Cornell University, McGill University and the University of Michigan, an arrangement by which students can cover the course and receive both degrees in six years. In Cornell before the establishment of the medical department a number of courses were given in anatomy, physiology, histology, embryology, bacteriology and physics which counted toward the degree in arts. There seems to be no reason why these studies should not be considered general culture courses suited to the student desiring a general education along biologic lines who has not in view the study of medicine. On the other hand, all of these studies are indispensable for the man who is to take up medicine, and if they are taken during the academic course, there is no reason why the medical course should not be shortened by the time required to take them during the academic course. The amount of general culture which the student gets by such an arrangement is about the same that English, French, and German students are now required to have, and while the complete college course with broader culture is desirable if possible, the combination of two courses in six years is a far better arrangement than that the student should not take any college course at all. A number of leading universities have now arranged courses which tend in this direction. For several years it has been possible for the student to obtain the degree in arts at Harvard in three years. The regular course of study at Johns Hopkins is three years, the scientific course at Yale has never been more than three years, and in some colleges and universities the somewhat lower requirements for entrance make the four years' course about the equivalent of a three years' course in other institutions. This shortening of the general culture course is of great importance to the man who must spend at least a year in hospital training as well as four years in the medical school, and we believe that the still more radical change which has been adopted in the universities which we have mentioned might be wisely introduced at other universities. This would not prevent younger men who had the time and inclination from pursuing a more comprehensive course, and it would encourage many men who now go into medicine without the advantage of academic study to try to get this valuable extra two years of training. No doubt the time will come in the future when our medical instruction in the United States will be more nearly uniform in all States, as is the case in nearly all European countries, and this combination six years' course is about what we may expect will be the standard.—*Am. Med.*, Aug. 24.

MEDICAL EDUCATION.

UNIVERSITY WORK IN MEDICINE.

It is no longer necessary for a young man who wants an education first to make the fateful choice between "culture" and professional training. Culture and preparation for a calling in life are not mutually exclusive. Culture that does not prepare for a distinct vocation is a pious fraud. Professional training which does not yield culture is a routine drill in some selected knack, with mind as much as possible left out. Culture that deserves a genuine man's respect is not something apart from the ordinary concerns of life. It is not to be had by withdrawing interest from real work, and devoting attention to a range of thought outside and above and beyond men's practical pursuits. What we really want to express when we praise culture is respect for well-developed, well-balanced, and well-adapted human capacity. There can be no culture which does not consist in doing something well. If there were only one sort of thing which is worth doing well, there would be only one possible culture. As there are innumerable kinds of career, all necessary to progressive human happiness, there are equally numerous possible cultures. The cultured man is he who is not merely mechanically fitted to a social function, but he whose thoughts and feelings work intelligently and harmoniously out into the whole process of life, from the point where his own part has to be done. To fit men for life by fitting them for something different from their life, is an ideal that would be grotesque if it had not so long been sacred. To fit a man for life by giving him insight into the most and best possible in his part in life, and zeal to realize that conception, is the sane and social ideal worthy to guide educational programs.

All this is old and familiar enough. It has ranked, however, as contemptible heresy. It is getting to be practical orthodoxy. It is too much to say that educational authorities have modified their verbal formulas to this extent, but actions still have the most prophetic voice, and the logic of events is arguing the case for rational education almost as fast as the most eager could wish.

With more specific reference to medical education it may be said that there are two contrasted types of demand which medical instruction might be planned to supply. The first may be suggested by supposing the case of a young man who says to himself: "I want to get out of life all there is in it for myself, and I want to do it by means of the medical profession. I want, therefore, to get, in the shortest possible time, all the medical information that I can turn to my uses." The other demand may be put in the form of an imagined expression of the general public interest: "We want a proper quota of men of first-rate natural endowment, to make protection of health their special function. We want them to acquire knowledge, and to develop judgment and skill to the limit of their capacity. We want them to bring all the resources of preventive and remedial medicine to the service of their fellows."

The history of quackery need not be called upon for proof that with very little education, involving practically no culture at all, men are able to achieve notorious successes in satisfying the former type of demand. The ideal of the medical profession is distinctly of the other type. The man who enters into the spirit of the profession wants to be the sort of man that the interests of society require him to be. His education should be of the kind which will do the most to satisfy the general need.

Medical instruction in the universities is adjusting itself very rapidly to these perceptions. The ideal of the scholar is knowledge of everything in its relations. When "pure" scholarship controls educational programs they tend to meander off from concrete affairs until the typical scholar is so interested in everything in general that he is good for nothing in particular. The ideal of the practical man, on the contrary, is ability to bring something specific to pass. When this aim controls education it tends to make trade-schools—places where men learn to turn out piecework of a prescribed pattern. The trade may be preaching or teaching or lawyering or doctoring or carpentering. In effect it is, in either case, rule of thumb work. The union of the technical school and the university provides the best conditions imaginable for proper balance between these tendencies. No knowledge or skill would be absolutely worthless to a medical practitioner or investigator. There are, nevertheless, many kinds of knowledge and skill that would cost a member of the medical profession much more than they are worth. On the other hand, the physician can hardly know too much about his own profession, yet he may concentrate his attention so exclusively upon technicalities as to miss many other things that would make him a more effective man. Every professional man has to fix on a working program between the two extremes. The medical curriculum in our universities is the best proposition that scholars and practical men together can offer at present toward a balance of the different claims.

There are just as sharp differences of opinion as ever among university men about fundamental theories of higher education, but whatever individuals think about the matter the universities are actually moving ahead, as fast as they can see footing for next steps, toward solving the problems of reasonable ratio between the more and the less essential in medical training.

With variations both of kind and degree for latitude and longitude and social stratum, the people with whom American physicians practice demand of the medical profession, and are sure to demand more and more, certain attitudes and habits of mind and certain sorts of information which, whether rightly or wrongly, are regarded as credentials of education. This fact requires at least a certain minimum of attention to those subjects which tradition has pronounced cultural. The physician is a man among men, a citizen among citizens. Not alone in his general relations to the state, but as a frequent incident of his professionl duties, he is called upon for knowledge and judgment about business and law and government. It would be an abortive scheme of education that would omit the rudiments of industrial and

civic economy. All the special knowledge which the physician must use consists merely of more particular cases which fall under the general laws of matter. Of course, he must be initiated at least into all the physical sciences. He must know the logic of scientific reasoning, the methods of scientific discovery, and some of the more important results of physical, chemical and biological research. It is not absolutely necessary to read French and German in order to be a progressive physician. It is a prodigious convenience at any rate, and if one wants to be sure of ability to keep among the best informed in his profession he must acquire those languages. The universities are not building a trocha around the medical profession when they propose a program of medical study based upon a foundation which includes all these elements. The standard thus established is justified not by an arbitrary theory of culture, but by calm calculation of the demands which a physician's proper functions must satisfy. In other words, the university influence in medical instruction brings into the curriculum those non-essential factors which a strictly professional training would ignore. These are in some respects more important to the fully equipped physician than the reputed essentials.

The university element assures one more capital factor in medical education. It guarantees that the knowledge which the student gets shall look toward science, and not stop with mere information. The old culture superstition located educational values in certain high caste subjects. We now find culture values not in the things known, but in the way they are known. To know anything in its connections is to be on the way toward all the culture possible. Perception of the relations within things and among things is science. The conduct of medical studies by the universities involves methods which will put the most technical details in scientific organization. Facts will be traced to principles. Phenomena will lead back to laws. Objects and occurrences will get their proper setting both in the genetic series and in the functional organization to which they belong. In the universities, therefore, technical training becomes more precise because it is cultural, and culture becomes more genuine by working out to technical values.

If the physician can not see his facts as they are, and can not draw correct conclusions from pertinent evidence, his failures have more direct and serious consequences than those of any other vocation. When we consider the gravity of the services which society expects of medical men, the highest standard for their education can seem neither too liberal nor too severe.

ON RESEARCH WORK FOR UNDERGRADUATES IN MEDICAL SCHOOLS.

One of the questions which the modern medical student sometimes has to answer during his course rather than at the beginning of it is, "Shall I or shall I not as an undergraduate engage in special research?" The question was formerly but little likely to come up. Teachers, as a rule, knew but little and students less of the real meaning of original investigation. Even those professors who had the capacity to undertake it or to guide it were prevented from doing so by the demands of private practice upon their time or the limitations of the equipment of the colleges. Now, that an increasing number of the occupants of chairs in our best medical schools give up private practice and give their whole time to the subjects which they represent, and are appointed to these chairs not only because they can teach, but because they can produce and are capable of guiding productive study the conditions are very different. The more earnest and ambitious medical graduates attach themselves to such professors and their laboratories and spend a period of time in attacking problems and solving them, for it is coming to be that demonstration of power in some sort of original work is necessary if a man wishes to enter the lists for the higher successes open to members of the medical profession. The enthusiasm of the capable investigator is enormously stimulating and it is but little wonder that young and eager minds coming into contact with it in the medical school or medical department of a university should themselves be fired with the desire of increasing the world's general stock of knowledge instead of being satisfied merely with gaining information regarding the contributions of others.

It seems to us, however, that, under the present conditions of medical education, for the majority of undergraduate medical students research work is not suitable. We recognize fully the influence of research upon development and the importance of gaining as early as possible in one's career the attitude of mind which alone comes through working for knowledge for its own sake in fields before insufficiently cultivated, but in most instances a student, if he is to occupy himself with it at all, does best to postpone until after he has graduated the undertaking of such work. It is but rarely that the undergraduate student is sufficiently prepared for original work. The average student of medicine has quite enough to do to follow faithfully the regular work of the medical course, and if he can do more than is absolutely required without injury to his health he will usually do best to direct his spare energies toward extending his knowledge beyond the confines of what is demanded in one or more of the fundamental branches. If he succeed in urging an unwilling instructor to put him upon a special problem he too often will neglect his regular studies, or injure his health and fall short of success in both. In such instances the student is injured and his instructor's time is worse than wasted.

There are some exceptions to this general rule; medical curricula are of necessity constructed for average students. In every medical school a few students stand out conspicuously as being especially capable, and the tendency is growing to provide more advanced and special courses for such pupils. Among the men of such a group there may occasionally be one who by virtue of unusual mental capacity, or of special training antedating his entrance upon medical studies, is easily recognized by a teacher as a man capable of undertaking research work during the undergraduate period without detriment to the student or to the school. The higher the standard of entrance to the medical school the greater the probability of finding such

men in its classes. If a student be asked by a professor in a good medical school to engage during his course in original research, the student will do well to acquiesce; for, in a good medical school the professors should be men who are capable of sound judgment in such matters, and the responsibility will lie with the teacher rather than with the student. Here is applicable as much as anywhere Goethe's admirable maxim:

Vor den Wissenden sich stellen
Sicher ist's in allen Fällen.

If the student has confidence in his teacher he can not do better than temporarily place himself unreservedly in his hands. He should regard it a great honor and privilege to be chosen to engage in original work and his master's confidence in his ability will make him doubly desirous of proving himself worthy of it. If, on the contrary, a student be ambitious to undertake original investigation and the faculty advise him to devote his whole time and energies to the regular work of the school, he will be wise if he be guided by those best capable of judging as to what is best for him.

While it is undesirable for most undergraduates to undertake any special original research which will require a considerable length of time for its completion, there can be but little doubt of the advantages which accrue to medical students who approach the regular work of the medical course by the methods of research. Perhaps as great an improvement as any recently made in medical education has been the introduction of such methods in the teaching of the regular course. The student may be led to acquire knowledge, in territories already explored, more or less according to the methods used by the original discoverers. In the study of law the "case method" of teaching is analogous. In this far, "research work" may be unreservedly recommended to all undergraduates. The responsibility of the proper conduction of such work depends upon the faculties of our medical schools. The method is past the experimental stage and its success is assured. It will no longer do to urge students to gain their principal knowledge from books. The knowledge which a student really makes his own has to be wrested with a certain amount of difficulty from Nature herself. Books and teachers may be good guides to direct the student in his own work; they are too apt to be harmful when more is expected of them. The utilization of the methods of research—personal observation, reflection and experiment—in the ordinary courses of the medical school will reveal many mistakes in current text-books; properly organized such courses may lead after a few semesters to the accumulation of data which will permit of the correction of various errors and so really constitute a collective original research.

If the class system could be done away with, and it is already falling to pieces in some schools, the objections to undergraduate research work would in large part disappear. At present we disgrace a student who does not graduate in medicine in a stated number of years along with the other members of his "class." It is desirable that the student have liberty to prolong his course without disgrace. When some such arrangement has been perfected it might be advisable for the best students to spend six or even more "Lehrjahre" in completing their training in the fundamental branches by Monographic Work in one or more departments. The course followed by Huxley in his own work before 1860 might well be applied to some extent at least in an undergraduate course of a school of the highest order.

It will be noted that while we are of the opinion that the majority of medical students are unfitted, especially during their undergraduate years, for original research, our reasons for this are different from those brought forward by one of our contributors.[1] His principal argument lies in the assumption that the methods of original investigation in the medical sciences are not only fundamentally different from, but actually injurious to, the "medical mode of thought" which is to be used in observing symptoms, arriving at a diagnosis, and deciding upon a course of treatment. But has he any evidence which would indicate that such an assumption is true? Surely every-day experience points to the opposite view and certainly the statements made in his paper can scarcely be regarded as convincing. It is difficult to understand how a training which teaches a man how to think and work independently can be an injury to his future career or how practice in the weighing of evidence and the arriving at justifiable conclusions should lead to unnecessary deliberation and slowness of judgment. Is it not an error, too, to think that research is limited to the determining of new truths of a general character only, and is it not rather the case that the majority of original investigations deal with particular problems in special fields? Only occasionally does that master-mind appear which is capable of new generalizations, justifiably far-reaching. Again, is it fair to consider that work unworthy of the name of research which, though it fail to say the last word upon the problem upon which it is engaged, gathers all the data at the time available, reflects upon them and draws legitimate inferences from them, even when the result is only an approximation to the whole truth? We think not. Indeed, since the time of Heraclitus, our main consolation after ineffectual attempts to reach the absolute has, perforce, lain in the habit of forming relative judgments. Nor will one regard such relative judgments or tentative conclusions as being devoid of responsibility when it is recalled that one of them may lead thousands of men into action under the most serious circumstances. Finally, does not danger lie in ambush on that road which would lead the "medical mode of thought" too far away from the principles which underlie the accurate observation, logical reflexion and judicious experiment which characterize all scientific methodology? It would not be a far cry, it is to be feared, from such a vagabond mode of thought to that "medical intuition" or *das aerztliche Gefühl* which was formerly accredited with the making of brilliant diagnoses, as it were, "by the Grace of God."

We must confess to seeing but little danger of our medical students or of our medical practitioners becoming too scientific. This country demands not only more scientific physicians in whom the people may safely put their trust, but also more medical scientists capable of

1. See page 736.

properly training them. It is gratifying to find that the medical schools of the better sort are making strenuous efforts to supply both urgent needs.

INDEPENDENCE OF STUDY AND THOUGHT IN MEDICAL EDUCATION.

Twenty years ago, when the course for the medical degree was compassed in two five months' sessions, it seemed essential that every moment should be utilized in lectures and clinics and the day's work uniformly consisted of eight or nine hours of lectures and arena clinics, with two or three hours additional of work in the dissecting room or chemical laboratory, the only practical courses given at that time. No time was left the student for study and reflection and it is small wonder that many of the facts presented eluded his comprehension at the time, and that many of them escaped his memory even before his course was completed. Such a system could not fairly be called one of education, but was rather a mere cramming of information.

The most significant fact in the recent remarkable progress in medical education is not the increase in the requirements for admission, nor the longer time now demanded in the course for the degree; it is the change in the methods of teaching, the great development of the laboratory and of the dispensary and ward clinics, and the subordination of the didactic lecture and the arena clinic, which are no longer deemed the all-sufficient means of training for the medical man. It is the object of medical, as of any other education, to develop and train the faculties that the student may acquire the power to observe closely, to record accurately, and to think logically and clearly along medical lines. The acquisition of information is incidental, and, at best, the amount of knowledge which a student can accumulate in his college course is but a small fraction of the sum total of that knowledge; much of that which he does acquire, of the wisest teacher, he may never use, and it is certain that most of the knowledge which he will use in his practice will be acquired during his post-collegiate career. The great purpose of the medical college life, is, therefore, to educate the student how to observe facts, to acquire information, and how to reason logically and closely in reference to them.

How is he to acquire the ability to observe keenly and accurately? Surely, not by reading or by hearing of the observations of others, helpful as this may be, but by the systematic and constant exercise of his own faculties; hence, the great utility of the laboratory and the small clinic in which he is brought in contact with the facts themselves and not with what somebody else has said or written of them. Likewise, he can acquire the power of clear, logical, sustained thought only by the exercise of his reasoning power, not by a mere description of what others have thought, or by the observation of the teacher, clinical or otherwise.

If these statements are correct then time must be allowed the student for study and reflection outside of the hours scheduled for lectures, clinics, recitations and the other stated work of the curriculum. Adequate time for this purpose is provided in very few medical schools of to-day. Almost without exception the curricula are overloaded, too many hours being demanded for scheduled work. This has doubtless resulted from the manner in which the course of study has been constructed. Each professor, duly impressed with the importance of his own subject, has demanded as much time as he could secure for the work of his department. The result has been not only an overloaded curriculum, but in most cases, one very poorly balanced. The amount of time allotted to any particular branch has depended, not on the relative importance of that branch, but on the comparative persistence and persuasiveness of the professor in charge. Evidence of this need only be sought in the wide variation in the courses of study in our numerous colleges. Branches taught in some are not taught in others, and the number of hours allotted to a particular branch in one schedule may be several times that given to it in another.

An effort was made recently to construct a curriculum on a rational basis, which is of interest in this connection. The faculty of this school having determined that radical measures were necessary, set before itself the following propositions: 1. How many hours daily should the average student be expected to devote to work, both in and out of the college? It was agreed that nine hours should be a maximum for students of the first two years, and ten hours for those of the last two years of the medical course. 2. What part of this time should be allotted to scheduled work in the college, and what part to preparation, reading and reflection, outside? 3. What proportion of the scheduled hours should be allotted to lectures and recitations, and what to laboratory, practical, and clinical work? Considering these two queries together, it was agreed that a one-hour lecture or recitation should receive from the average student two hours of preparation, while a two-hour laboratory, practical or clinical exercise would require only one hour of preparation. Three hours, therefore, should constitute a period, whether for lecture, recitation, laboratory, or clinic, with this difference, that in case of the lecture or recitation one hour of the three would be spent in the class room, in the laboratory or clinical period, two hours, would be so spent. It was further decided that for the first two years an equal amount of time should be assigned to lecture and recitation periods on the one hand and to laboratory periods on the other. If, for example, during a certain portion of the year a student has one lecture, and one recitation daily, involving four hours of preparation, and a two-hour laboratory exercise involving one hour of outside work, during another interval he would have only one lecture or recitation and four hours of laboratory work—a total of nine hours of work daily in either case. During the clinical years a larger portion of the time is spent in scheduled work, the amount of time given to clinics and practical courses being larger, but not less than four of the ten working hours daily are allotted for outside study and reflection.

4. The above propositions having been agreed upon, it remained to determine how much time should justly be allotted to each of the required branches of the curriculum. And this, be it noted, was not ascertained by asking each head of department how much time he felt

that he required to teach his branch exhaustively—that being clearly impossible in any case—but by general discussion and conference, as to the relative importance of the several subjects. It is of interest to note in passing, how promptly and amicably this question was settled. Heads of departments, previously insistent upon a large amount of time, when faced with the proposition that after all the student had only a given number of hours at his disposal, readily assented to an allotment of hours fairly proportionate to the importance of the several subjects.

This specific case has been cited to illustrate what seems to us a rational method of constructing a course of study, but the most significant feature of it all is the large amount of time allotted to the student for independent reading, reflection—thinking—outside of the scheduled hours. The medical college is not so much a place where the student is to be taught, but a place where he is to be educated, to be given the proper environment for the growth and development of his faculties. The faculty must abandon the idea that he is a reservoir to be placed upon the benches of the lecture room during his every waking hour and stuffed with facts, and accept the idea that he is an observing, thinking mind whose chief need is an opportunity to grow.

THE ELECTIVE SYSTEM IN THE MEDICAL SCHOOL.

Among the modern pedagogical methods which are being discussed in relation to medical education, is the elective system, now so generally adopted by the leading institutions for general learning in this country and abroad. It may be defined as that method under which a student pursuing a course for a degree is allowed some choice in the studies he shall take, the method by which he shall pursue them, and the teachers who shall instruct him. Election finds its chief *raison d'etre* in the fact that individuals differ widely in mental make-up, not only, and not so much perhaps in reference to the sum total of mental capacity, but in the relative strength of the faculties; some men excel in powers of observation, others in memory, others in imagination, and others in reasoning power, and if it be the object of an education to develop a well-balanced, thoroughly-trained mind, it is obvious that, if there are wide differences in the individuals to be trained, the methods of training must differ in different cases.

The acquisition of information is one of the purposes of a college course, and here, too, there is abundant room for election by the individual student, because of the immensity of knowledge. It is obvious that the amount of information which the most diligent student can obtain of any subject during a college course, constitutes but a fraction of the sum total of knowledge therein. A teacher of anatomy, for example, devotes his life to the acquisition and promotion of knowledge of his chosen subject and finds that life all too short for its mastery. While, it is true, there are certain fundamental facts which every student must be taught, it seems clearly impossible for any teacher to select a group of topics, and to present them by any method which shall be the best possible for every individual student. It may, indeed, be safely asserted that no two teachers of anatomy would agree as to what constitutes an ideal course in that subject for a medical student, and this assertion would hold good for teachers in any other branch. Evidence of this is furnished in the widely diverse character of the courses offered in the various medical schools. This being the case, why should not the individual student, aided by the advice of his teachers, be allowed some choice in the matter and permitted to adapt his course of study to his tastes, his abilities, and his needs?

The fundamental idea of the elective system is then, the adaptability of a course of study to the peculiar needs and purposes of the individual student, and it is the opinion of the best educators that ideal results can be procured in no other way. But there are further advantages in the system. Not the least of these is the increased enthusiasm and interest with which the student pursues his work. The difference in the spirit which animates one who is taking courses of his own election, courses which he has taken voluntarily, and not merely because they were prescribed by the faculty, has been noted by almost every teacher who has had to do with them. This difference in spirit reacts in turn upon the teacher and affords him a constant stimulus to faithful and efficient work. It has sometimes happened that an enthusiastic, progressive teacher, having been promoted to an assured place in the faculty, has begun to show a decline in diligence and effectiveness soon after attaining the coveted place. Sure of his position, certain of large classes, his course being required of every student, a strong incentive to good work is removed. Very different is the situation under the elective system; the pupil being allowed to choose the professor's course, or one of several others, offered by ambitious younger men, perhaps assistants in the department, soon begin to discover that the larger experience and knowledge of the older men are more than offset by the eager enthusiasm and energy of the younger assistants, and presently the professor finds that the attendance upon his course is diminishing. Not less important is the opportunity and stimulus afforded to the younger man. Like the privat docent of the German University, he is placed squarely in competition with others and realizes that his future career is in his own hands, to be determined solely by the ability, capacity for work and efficiency which he displays as a teacher and investigator.

Then, too, the very act of election on the part of the student, his careful consideration of his own needs, and the selection of the courses best fitted to them, constitute an educational resource of no mean value.

The chief objections urged against the elective system are, first, the danger that the student will be inclined to specialize, devoting all, or most of his time to one subject, and second, the expense involved in increased space, equipment, and instructors. The advocates of election insist that these objections are invalid. In reference to the danger of specialism, it is said that election does not necessarily imply unlimited freedom of choice as to the general branches to be taken, but that, if the student be allowed some latitude as to the topics under each branch, as to the

method of study, whether by lecture, recitation, laboratory or clinic, and as to teachers, all of the benefits of the plan can be secured. A broad and thorough course can be insured by insisting, first, that each student present before graduation a specified minimum of credit in each general branch; second, that his cards of registration be subject to approval of the dean or other officer of the college, and third, that he be required to pass a thorough, practical examination in each department before graduation. It is urged further that the student's own judgment and common sense are prone to be underrated. The number of those is very few who do not realize the necessity of a good knowledge of all of the branches as a preparation for medical practice.

In reference to the need for larger facilities in the matters of space, equipment, and faculty, the advocates of the elective system reply that these must be provided in any event, if the demands of modern medical education are to be met. The subdivision of large classes into small groups for recitation and conference, laboratory and practical exercises, and especially for bedside teaching, is a *sine qua non* for the proper and adequate training of medical men.

A further advantage of the elective plan is the fact that it opens the way for the utilization, under some such scheme as the extra-mural plan of Edinburgh, of many hospitals where no students are admitted at present. This can not well be accomplished except under some plan by which the members of the staff giving instruction are suitably recognized and students are given full credit for work done.

The elective system has been introduced more or less extensively into a number of medical schools. In the Harvard Medical School the Medical Departments of Columbia University, Johns Hopkins University, the University of Pennsylvania, Rush Medical College, and some others, more or less amount of election is allowed. The plan is so generally in use and has been so successful in the larger institutions of general learning that the experience of those medical schools in which it is being tried will be watched with great interest by all who are concerned in any way with medical education.

VALUE OF THE FUNDAMENTAL BRANCHES.

As soon as the student has satisfied the requirements for admission to the study of medicine in some reputable school he may be said to have "burned his bridges" in a much more accurate sense than obtained ten or fifteen years ago. The matriculation examination is becoming yearly more stringent in the larger number of medical colleges, while the demand that the prospective candidate for graduation shall be a person of broad and liberal culture is now more imperative than ever. Time was when the medical student and his friends regarded the freshman as a sort of experimental bread-winner; if the preliminary canter over the medical course did not please him or was not successful any other race could be easily entered. If the boy discovered that he did not care to be a physician, he could take up the grocery business or go back to the farm. Contrariwise, if he failed in, or for any reason abandoned some other occupation, there was always a convenient, and frequently a complaisant, medical "college" to be entered at short notice. A comparison of the Announcements of the previous decade with the present will readily show how much more difficult it now is than it formerly was to carry out the curriculum, and this difficulty is much more likely to increase than diminish. The time is probably at hand when many of the subjects now taught in the freshman and sophomore years will form part of the student's preliminary education.

The additions thus made have an important bearing on the courses commonly known as the fundamental medical branches—biology, anatomy, chemistry, physiology, etc.—because the student must himself decide whether he will attend a college where the latter are mostly disposed of as a part of his preliminary studies and where, consequently, more time is devoted to purely medical investigations, or whether he will undertake them as a portion of the regular collegiate program. It is not our purpose to discuss this matter here except to point out that the pursuit of one or other plan is probably as desirable for one class of students as it is undesirable for another, and that to the average student it matters little when or where he has received such instruction, as long as he does receive it, before engaging in more advanced studies.

Apart from the ambition that most students exhibit to proceed to the final degree, there is a feeling that the subjects of the earlier years are merely means to an end—a sort of ladder on which to climb and when the top is reached to be flung aside as so much useless lumber. It is a common experience to hear even the senior student, not to speak of the recent graduate, glory in the fact that the elements of histology and chemistry, once so familiar to him, are now but a dim memory of that distant past when he was an unsophisticated freshman. While this declaration is not so frequently heard as in former days when the line of demarcation between biology and pathology was more plainly drawn, yet the feeling that there is a great gulf fixed between the theory of the fundamentals and the practice of the bedside has by no means died out.

Is there any reason why, for instance, human anatomy, or embryology or organic chemistry should not be studied, as an introduction to the practice of medicine, with the same persistence and the same singleness of purpose that seems to be so readily accorded to general surgery? If the fundamentals are really essential to his success as a practitioner and to his growth as a scientific man, it is fatal for the student either to neglect them altogether or to regard them, in his after years, as the cast-off clothing of a medical fashion long outworn and fit only for the garret of his mental storehouse.

Probably one of the reasons why in the past certain fundamental studies failed to appeal to students and practitioners of medicine as essential branches was the short time allowed for grasping all the facts and fancies of medical teaching. When the two or three year student (often defective in a preliminary scientific training) was confronted by the mass of material that then, as now, was set forth for him to learn and digest he,

perforce, chose the so-called "practical" studies and rejected the others—singing, meantime, the ancient song:

"Could a man be secure
That his days would endure
As, of old, for a thousand long years,
What things might he know!
What deeds might he do!
And all without hurry and care."

We have not recovered, even with the lengthening of the courses of study and the relegation of some branches to the entrance examination, from this feeling that art is long and life is brief.

This neglect of the fundamental branches, in the choice of studies that the student has felt and still may feel it necessary to make as a burden upon his memory, sometimes results from a notion that a large portion of them is, in some sense, more ornamental than useful, just as many educators still cling to that vague idea, current with our grandfathers, that a more or less intimate knowledge of Greek and Latin forms the chief ingredient in the education of a gentleman.

Yet another obstruction in the path of the student was the manner in which the fundamental branches were formerly and—in some colleges are still—taught. Without denying certain inherent virtues in didactic teaching, there can be no doubt but that the mere memorizing of facts in physiology, anatomy and chemistry presented almost entirely in lectures and textbooks during the freshman and sophomore years furnished the most certain means of forgetting them the year after graduation. The embryo physician at the beginning of the twentieth century has, it is safe to say, no such excuse. There are few, even of the smaller colleges, in which the old-fashioned and uninteresting "knife and forceps" anatomy (furtively studied in a foul and nauseating room) is not replaced by demonstrations, recitations, illustrated by models, dried and moist preparations, drawings from the subjects, etc., all carried on in a clean and pleasant laboratory or amphitheater. A corresponding improvement has also taken place in the methods of teaching all the other primary branches, where the laboratory has displaced the old lecture-room, where the student is trained to observe and to record his observations in a manner that will be of the greatest service to him when he is face to face with diseased conditions in after life.

If we accept, in this connection, Spencer's test and inquire what knowledge is of most worth, it is surely not necessary to argue, for example, that without a knowledge of anatomy, general, regional and pathological, surgery would in practice be about as rational and effective (to quote his words) as if "a merchant were to commence business without any knowledge of arithmetic and bookkeeping. We should exclaim at his folly and look for disastrous consequences. Or if, before studying anatomy, a man set up as a surgical operator, we should wonder at his audacity and pity his patients." In like manner, if a knowledge of anatomy be essential to the practice of surgery it is also required in internal medicine, in medical jurisprudence, in obstetrics, in gynecology—in every condition and walk of medical life.

If the intimate relations of anatomical studies to the more advanced subjects of the curriculum be admitted as an axiomatic truth, the importance of physiology—which may be regarded as including biology, embryology and histology—chemistry, pharmacy, etc., to one who desires a lasting and widening knowledge of every other branch of medical learning can not be gainsaid. But this study of fundamental medicine is not to be pursued simply because it is a help in getting "credits" or because it is useful in passing examinations in the final branches. It represents the scientific part of medicine and it certainly begets that most useful and valuable of all habits—the scientific habit. It teaches the student to try and see things as they really are, and, while exercising a rational skepticism, to give due weight to evidence of the proper kind. This is one reason why a conscientious study, in accordance with modern methods, of the subjects of the first semesters is likely to assist the physician in unraveling the tangles of everyday practice, to enable him to keep abreast of the times as he progresses in all useful knowledge, to distinguish false from true, to reject doubtful theories and to help him from being driven hither and thither by every wind of doctrine. Most important of all, a continued study of them furnishes the index by which his fellow practitioners and—at last—the public decide what kind of physician he really is.

To the student who is just entering on his first work we would say: If you wish to be commonplace in every acceptation of that term the way is easy and medical degrees not so very difficult to obtain. If, on the other hand, you desire to live and work among the worthy and be classed among the best no better preparation can be had than setting upon bedrock and keeping in subsequent repair the foundation stones of our temple of art. Against such a defense, the winds and waves of ignorance of both "regular" and "irregular" charlatanism, of exaggerated therapeutics, and of false pathology, will surely beat in vain.

TEACHING BY RECITATION, DIDACTIC LECTURE, THE AMPHITHEATER CLINIC, THE WARD CLASS.

The four methods by which the practical branches of medicine, surgery, obstetrics and the specialties are generally taught are by recitation, by the didactic lecture, by the amphitheater clinic and by the smaller clinic in the dispensary or ward of the hospital, i. e., the ward class. By these methods, with a little practical laboratory work, the student in his junior and senior years is expected to be drilled in applied medicine so that he will be fitted to engage in practice.

What are the advantages of each of these methods and what their mutual relations? It is frequently said that the didactic lecture should be discarded, that recitations are unnecessary and a waste of time, as the student can learn by reading without reciting; that the clinic to large classes is but a dramatic display, and that teaching should be done wholly to small sections and in the ward or in the laboratory. May it not be that there is something of good in each of these methods and that a too hasty discarding of the one or the other may be detrimental to the best interests of medical education?

If by recitation is meant merely the reciting from memory of certain allotted portions of a text-book, and if the teacher is but a timekeeper who records attendance and marks the student according to the nearness of his approach to repeating the order and wording of the approved text-book, then the teacher is a figurehead, the recitation a farce and an injury to teacher and pupil alike. The true recitation is a conference. The teacher not only listens and criticises, but he invites inquiry; he explains and expounds; he may talk much more than does the pupil; he does not hesitate to call attention to debatable statements in the text-books; he quotes other authorities; he incites his students to look up original articles; he is something far different from a recording clerk who marks percentages showing a student's ability to memorize. And the student under this method of teaching is not only acquiring facts, but is learning how to study. Many students do not know how to read and assimilate a medical article even though it is well written. They fail to put in their proper relations the facts of prime and of subordinate importance. Their conception of a disease is, therefore, a distorted one, its relation to other diseases is misty, the bearing of facts in physiology, pathology and therapeutics upon this disease and its clinical manifestations are poorly appreciated. When such students attempt to tell what they know their failings at once become apparent to themselves and to others. One often thinks he understands until he tries to put his knowledge into articulate or written words. Loose statements made in the recitation do not pass the muster of the critical instructor and the critical fellow-students. Exactness of knowledge and of expression is demanded, and the student makes but a few failures of this sort before he begins to change his habits of study and learns to read, think and express himself clearly and logically.

The proper place for the recitation is at the beginning of the junior year, when the study of the practical branches is first taken up. Before beginning the higher work of the senior year and the study of actual clinical cases there should be a general survey of the subject so that things may be seen in their proper relations, diseases may be grouped and differential diagnoses made understandingly. The study of practical medicine and surgery should not be begun with the oil-immersion lens, but with an objective of lower power and wider field. The recitation course carefully conducted, with properly fitted teacher, good text-books, classes or sections of no more than twenty-five gives this training that is necessary before the student enters upon the more advanced work.

Clinical work is in reality laboratory work. The ward is the laboratory, the patient and the instruments of precision the material; problems are here to be wrought out requiring the same powers of observation, the same collocation of facts, the same logical reasoning, the same precise demonstration, that are required in the laboratory of chemistry or pathology. Every argument elsewhere made for laboratory methods applies to the clinical method of teaching. The closer the student comes to his patient, the more he works out for himself the problem of disease confronting him in a given case, the more firmly fixed in his mind will be the facts thus learned and the better training has he had in independent work. The spirit of original research can easily be developed where students can have ward and bedside opportunities for the daily observation of patients and the comparison of different cases of the same disease, with free access to case records and a consulting library. Instruction in ward classes of six or seven, where the instructor quizzes and expounds, using as a text a concrete case already carefully studied by the members of the class and watched by them for days or even weeks, this is an ideal method of teaching the practical branches.

And there can be no question that this method of teaching more than any other benefits the instructor and keeps him stimulated to do his best. The case must be carefully studied by him before he can intelligently demonstrate it to a critical group of bright senior students. Loose statements will not be tolerated, nor can the teacher in the ward class, as is sometimes done in a clinic and in the arena, draw upon his imagination to fill in the missing symptoms or physical findings that enable him to make out a typical case of some disease. He must demonstrate not what the book says ought to be, but what is actually present.

But what of the amphitheater clinic? Is it wholly useless and to be discarded? As a means of training the student's own powers, of teaching him self-reliance and ability to reach conclusions and to produce independent work it can not be compared with the ward class just mentioned. But ward classes must be small and instructors must be many. From the nature of things in a large school these ward classes can not all be taught by the great physician or surgeon who stands at the head of his department, a man perhaps of world-wide fame, one from whom all the students desire to receive instruction and to whose teaching they are by right entitled. In order that all may learn of him his sections must be larger, fifty, a hundred or more; the amphitheater and not the ward must be the schoolroom. The man selected to give the large clinic should be a man of proven unusual ability in some one direction. He should be either a great operator, an original investigator, a physician of unusually wide experience, or a teacher who has unique ability in imparting knowledge. Such a man can teach a large audience. With a certain class of cases there is much to be learned by seeing the patient even from the distance of the benches of the amphitheater; such as a deformity of a fracture, its method of reduction, and the dressing applied. A tabetic can be well demonstrated as to gait, sensory and motor disturbances to a large class. Further, a class learns much from a careful review of the history of the case and from observing the methods of a good teacher in eliciting a history. The analysis of symptoms, the careful differential diagnosis, the discussion of prognosis are all valuable in the right hands.

The didactic lecturer who repeats the text-book to the class is a thing of the past, or should be. The didactic lecture should be limited to the taking up in detail of special topics, the work as a rule elective; subjects can thus be gone into more fully than is possible in a reci-

tation course and more systematically than in the clinical work. Here, too, the same high-grade teacher is demanded as for the clinic, the man who by his own original work has something new to propound, or who has by an extended study of the work of others made himself master of the subject so that he can speak authoritatively, or who has an unusual ability in the presentation of a topic so that the crooked is made straight and the rough places plain for the student. Especially fitting for the didactic lecture is the discussion of recent work in the different branches of medicine, work that is not yet in the text-book, that is as yet in magazine and monograph. This is the proper field for the didactic lecturer. Merely to repeat the old familiar story that the student has read or can read in the text-book, that has been rehearsed in ward class and in clinic is to waste valuable time.

Recitations lay the foundation; they give the broad view, enabling things to be seen in their proper relations; the ward clinic trains the individual powers of observation, teaches independence of thought, gives manual training and skill in technique; the clinical lecture shows especially the methods of a master in his specialty; the didactic lecture takes up a topic exhaustively and brings the knowledge up to date.

There is a place for all these methods of teaching the practical branches, and where the work is properly divided, where instructors are not mere automatons, but wide-awake teachers; where the professors are experts as well as teachers, students should get a training enabling them to go out and become not only successful as practitioners of medicine, but successful as students in continuing their studies by themselves, their zeal in the pursuit of knowledge keeping them abreast of the times for many decades after they have been graduated and in spite of the cares and exactions of a busy practice.

CHANGES IN OUR MEDICAL SCHOOLS NECESSARY TO MEET MODERN CONDITIONS.

It is difficult to take the part of a prophet and it is thankless to take that of an adviser. There are, however, some changes which nearly all agree are coming to our medical schools, here earlier and there later, but eventually everywhere. The most important of these is the elective course. This system seems to be necessary on account of the enormous overgrowth of the curriculum and of the necessity of more thorough and more individual work. It gives the greatest possible liberty to the teachers and to the students alike. It eliminates by the law of the survival of the fittest the antiquated and the careless teachers. It makes the fictitious differences in professorial titles null and void, and it gives the active teacher immediate and effective recognition. It makes all changes in methods of study and institutional management easy.

The architecture of the medical school must be modified. Heretofore a single roof has been broad enough to house the medical college. It is not so any longer. There must be an anatomical institute, an institute of pathology as well as a hospital to make an effective medical school. One roof and even one location is not enough. Perhaps one faculty is not enough, but several faculties may be necessary to the coming medical education—one working in one part of the city or country and one in another—but all co-ordinated by the unifying and correcting action of the student's privilege of election under the guidance of his dean.

Extramural or non-resident teaching promises to increase greatly the facilities for education. In no way can adequate obstetric teaching be secured except by dividing the students among scattered lying-in hospitals and dispensaries. The same may be said of medicine and surgery, of the various specialties and of that intimate dependence between patient and student so necessary to his best interest and success. The medical school that shall achieve the widest success will be the one that allows its students the greatest liberty in selecting their teachers and places of study, still giving credit and ultimately a degree on evidence of work done.

In the coming medical school the social and esthetic life must be more fully satisfied. The buildings and furniture should take on dignity and beauty if they are to bring out the best in thinking men in the four years or more they are in use. There must be appropriateness and beauty in the lecture rooms and library, in the laboratories and assembly hall. The physical needs of the students must be met in the gymnasium and perhaps in a common dining-room or in clubhouses. Lectures laboratories and libraries are not enough to educate a medical profession which shall command the esteem and receive the economic tribute of modern society. Our medical students need all those helps to social life and esthetic culture which the university finds itself obliged in modern times to offer. Consider the activities of the university, and the needs of the medical school are counted. The club, the fraternity house and the common dining-hall; the dormitories, the gymnasium and the open playground; the esthetic decorations of the buildings, grounds, audience rooms and study rooms; the assembling of the broadest, most enthusiastic and most masterly scholars; the cultivation of all that is earnest, refined and devout in the student body—these and much more that these things stand for, are before the administrators of our medical schools for utilization.

Medical schools must become imbued with a more scientific and democratic spirit. Into the management of the school must come not only the influence of every member of the intramural and extramural faculty, but the student body must be well represented in the educational councils of the college. Only so can the dwarfing influence of vested interests and of antiquated ideals be overcome and the modern spirit of individual, active, life-imbuing education be given free course.

THE PLACE OF TEXT-BOOKS IN THE MEDICAL CURRICULUM.

It may be set down as a proposition from which there will be no dissent that every agency should be availed of that will contribute to the better comprehension and application of the science and art to which the medical student dedicates his life, and that will help to make him a more intelligent and a more practical physician. All education should have for its ultimate object not

merely the imparting of knowledge, but even more, its successful and practical application. This end can be attained in divers ways, and while not a little depends upon the teacher and his methods, far more depends upon the pupil.

Discussion has recently waged about the part that the didactic lecture should play in the medical curriculum, and there has been a sort of frenzy with regard to the place that should be given to laboratory teaching. A sober judgment will decide that each of these has its own peculiar value, and that a better result will be secured from a judicious combination of the two than by any undue preponderance of the one over the other. Nor are all of the requirements yet fulfilled by these means. It is not possible in any course of medical instruction, however complete, to cover the entire field in all of its details, and this unavoidable deficiency must be made good by the use of text-books. This has a further advantage in stimulating intellectual activity and growth and developing intellectual independence, as well as in broadening the mental view and strengthening the mental grasp. As compared with the artist's picture, didactic, clinical and laboratory instruction may be considered as furnishing the sketch or outline, the details of which must be filled in by ample and judicious reading. It is a physiologic axiom that an unused organ atrophies and an unexercised faculty becomes enfeebled, and the brain and the intellect are better developed for being given a certain amount of pabulum to assimilate, in addition to that which it receives from the teacher, as it were, in a predigested form. The text-book, therefore, remains an important adjunct in the medical curriculum, its use in its place should be encouraged and we would commend especially the use of those that deal fully, comprehensively, and in a detailed manner with all the phases of the subject with which the student should be familiar, rather than the more concise and condensed presentations which may be committed to memory, and do not form a strong foundation upon which a worthy superstructure of knowledge may be built.

The several elements of a thorough system of medical education, including didactic lectures, clinical instruction and laboratory teaching, and the collateral use of text-books may be compared to the constituent factors of chromoscopy, or colored photography, of which if any one be wanting an uncolored picture results instead of the naturally-tinted reproduction.

WHAT DOES THE PRACTICE OF MEDICINE OFFER AS A LIFE WORK?

Under the present status of medicine in this country, what has medicine to offer as a life work? To the student deficient in preliminary training, and who must, in consequence, enter the only schools which will receive him, namely a poor one, the outlook is bad. Such a student begins the study of medicine with the idea of gaining a livelihood only. He has no conception of medicine as a science; no pleasure in the investigation of the many problems which confront the physician; only a half knowledge of the responsibilities of his calling; he can have no pleasure in scientific discussion and in fellowship with the best men of the profession; he will exist without social standing among the educated and cultured people of the community. He enters medicine to gain a livelihood, and he will find that his investment was a poor one.

To-day the status of medicine is such that he who would meet success must have a good preliminary education. The discipline of mind, the broad culture of a college education would be of great assistance to the student and to the practitioner. But if the student has not this training he should be able, as a minimum preparation, to pass the entrance examination of a good university or college. In addition, a reading knowledge of French and German is very essential to-day.

To a student so prepared who will spend at least four years in honest work in one of our best medical schools, and supplement the medical course with a service of one or two years on the house staff of a hospital, medicine offers much.

To a physician so educated, who is energetic, painstaking, and thorough in his work and whose integrity is unimpeachable, medicine offers more than the law, theology or politics. As a practitioner his life will be full of the most laborious and exhausting work. He will be much exposed to inclement weather, at all seasons of the year. His duties may interfere with his social and material pleasures. His sleep will be broken by calls to the suffering.

But to offset the discomforts which experience and fortitude lessen until he no longer considers them, he has the robust health and sturdy character which open-air exercise and the constant battle with and frequent mastery of the fell destroyer bring him. In the city his duties may fall in more pleasant lines of work, for a metropolitan practice is attended with less physical discomfort than is that of a country practice.

Wherever located, a good physician has no idle hours. Work—good, well-directed, persistent work, such as a properly educated physician knows how to do—will distinguish him from the indolent and ignorant in medicine, as it will in all walks of life. Medicine to-day offers opportunities for work as it never has in the past. For him who knows how, there are many problems to be worked out. The alleviation of human suffering, and the prolongation of life are subserved not alone by attendance upon the sick but by every measure which will enable us to discover the cause of and prevent disease. Much remains still to be investigated, and it lies within the province of the practitioner, quite as much as in the field of work of the pathologist, to make scientific observations and experiments. The intellectual life of such a man is full. He has the pleasure of constant intercourse with scientific, broad and cultured people. His work gives him but little time for the so-called pleasures of society. But he is a factor in the community, honored, respected and loved by all who know him. Such a man working unselfishly, doing good work because he is interested in it, and not because he expects a fee for it, will perhaps not become wealthy. He will, nevertheless, have a sufficient income to make a comfortable home and lay by enough to keep him and those dependent upon him when old age shall have come.

There never was a time in the history of the world, probably, when medicine gave as much promise to the student of a successful career, as now. But he who takes it up as a life vocation, from sordid motives, or who is poorly prepared and improperly educated, will meet defeat in competition with the man who is a physician because he wishes to benefit mankind. The true doctor is a nobleman. Carlyle said of the profession: "He that can abolish pain, relieve his fellow mortal from sickness, he is indisputably usefullest of all men. Him savage and civilized honor. As a lord chancellor, under one's horsehair wig, there might be misgivings; still more so, perhaps, as a lord primate, under one's cauliflower; but if I could heal disease I should say to all men and angels without fear, En Ecce!"

THE MEDICAL COLLEGE ASSOCIATIONS AND THEIR INFLUENCE ON HIGHER STANDARD OF MEDICAL EDUCATION.

The progress of medical education in the United States is one of the most remarkable phases of modern culture which has been observed during the past fifteen years. For the motives of this progress we are obliged to look in various directions: to the enormous increase in wealth which has marked our mastery over the physical resources of the earth through modern machinery: to the equally unexpected increase in our knowledge of diseases through the general scientific advancement, and lastly, to the coincident revival of a science or art of pedagogy. But aside from these general motives which underlie the progress of medicine as a whole, the course of progress in medical education and its most remarkable unanimity throughout the whole United States is in a peculiar measure due to the influence of the Association of American Medical Colleges, and its sister organization, the Southern Medical College Association. These bodies have kept the various rank and file of medical colleges in step and up to time. There have been leaders and scouts far in advance of the general body, but the great bulk of reputable colleges have been kept near these leaders by the unifying influence of these Associations, seconded by the hearty support of the various State Examining and Licensing Boards.

Through the influence of these pedagogic Associations, we have a gradually advancing standard for our professional education which is unparalleled by any similar growth in law, theology or schoolmastery and equaled only by that of dentistry and pharmacy. The preliminary requirements are now about those of the second year of the high school, but fortunately many, perhaps one-fourth of the eighty schools united in these bodies, are one or two years in advance of this minimum.* The course of study now covers four years, and this is probably the maximum of required intramural study.

In attaining these ends the Associations have acted very cautiously and very firmly. These two objective points have been held firmly in view, but topics of general pedagogic interest have not been neglected as a reference to the proceedings of their meetings show.[1] The "Syllabus" was the work of three educational conferences and contained information and detailed instruction which saved much expensive and discouraging experimentation in the rapid change from a two-year to a four-year graded course. Later the establishment of medical libraries was encouraged and directed and the elective system was advocated. At each meeting numerous papers on medical pedagogy were introduced and the discussions were active, interesting and valuable. Delegates went home with added enthusiasm for better and more ideal work. Some radical and revolutionary papers in the early meetings of the Associations have been lived up to by the faculties of all the members and now the ideals of these iconoclasts are held as fundamental.

The work of these Associations has been so quiet and unpretentious, so full of argument and persuasion and so lacking in contention and compulsion that were it not for its depth and vigor it would attract little attention. A few of the leading colleges have never entered either Association. Three colleges have for one cause or another resigned, and two colleges have been expelled. Eight colleges have been denied membership. Out of 125 regular medical schools about 80 hold active membership in one Association or the other. There are now only five or six schools outside this membership which maintain a standard equal to the required minimum. It would seem as likely that all medical schools would find it to their advantage pedagogically and socially to unite into one helpful association as that literary colleges and even high schools have done so.

There is every evidence in the combined meetings of the two Medical College Associations which have been held during the last three years at Columbus, at Atlantic City and at St. Paul, and by the action taken in both Associations at their last meeting, that some union is likely to take place during the coming year. Nothing stands in the way except slight differences, which are rapidly passing away. The work of the Associations hereafter will be almost entirely pedagogic. Such great changes as medical education has suffered has been attended by much crudity and lack of system. The methods, purposes and motives of clinical and laboratory teaching and the general coördination of the whole curriculum is the work of much individual and collective labor. Let the Associations lay aside their differences and their legislative action and attend to this great problem on which so much of the honor and credit of our profession depends.

AN OVERCROWDED PROFESSION—THE CAUSE AND THE REMEDY.

We have in the past called attention to the overcrowded state of the profession in this country and the prospects for the future. It is not difficult to name a cause for this evil; it is chiefly to be looked for in the multiplication of facilities for medical education of a certain sort, and to the ambitious and advertising proclivities of a certain portion of the profession. For many years in the past there has been a steady multiplication of medical colleges, organized to meet a felt want —not of the medical profession—but of the founders. Articles of incorporation are easily and cheaply gotten, and with a little investment the new institution is

1. Bulletin of the American Academy of Medicine, 1890-1901, inclusive; THE JOURNAL, 1889, et seq.

launched. The result is not only an oversupply of diplomaed graduates, but the usual inverse ratio of quantity and quality. The highways and byways are raked for students; the preliminary requirements are nominal in the strictest sense; and the graduation requirements too often necessarily follow the same rule. The instruction is mediocre, the clinical facilities poor, but the institution goes its way and flourishes; the faculty gets an advertisement and a growing clientele of half-fledged doctors, all the readier by reason of their insufficient mental and professional acquirements to furnish business for their revered professors in the way of consultations, etc., while the profession as a whole and the public suffer in proportion. We have cheapened the medical profession by making it too common and lowering its standards, if not actually as compared with the past, at least relatively as compared with the scientific advances of the day. It is true that our best is in no way inferior to the best of any land, but our average is not what it should be, and our lowest is infinitely below what ought to be endured.

This is what has been in the past and what we have not yet fully outgrown. That there are agencies and influences at work for the better is undeniable and their effects are already visible. The medical practice acts that exist now in the great majority of states are to be counted among these, and this we owe to the organized effort of the profession which has latterly become, more than ever before, alive to its own interests and that of the public in this regard. There is much yet to be done in this line; they must be made more universal and more uniform, and as regards the latter there must be no levcling down. If we wish to make ourselves respected we must make ourselves respectable—a truism too much overlooked in the past. Then, there should be a self-denying ordinance adopted by the profession generally and the title of professor be no longer an indication of stockholding in a corporation for profit, direct or indirect, but on the other hand a valid evidence of acquirements that have received the endorsement of public and professional appreciation. With this advance in requirements for practice there should be a marked and general stiffening up of the preliminary educational requirements; the reform must start at the fountain head if it is to be what is imperatively required. The control of entrance examinations must be put out of the hands of the medical college faculties, which should be delivered from the temptation of augmenting their student lists. There should be in each state a non-political authority, independent of the colleges, to regulate the requirements for admission to the medical course as well as to medical practice. This is already the rule in some states. Until this system is universally and efficiently applied we still shall have much that should not be.

The prospect, however, is brightening, and there is no call at present for any very pessimistic outlook for the future if we can only sacrifice self-interest and work together for the common good. Of the 160, more or less, existing medical colleges in this country and their thousands of professors and other medical attachés, there are a large number that can profitably be spared. It is to be hoped that with higher standards universally applied their number will soon be adequately reduced, and that only the fittest will survive.

WHAT SHOULD GOVERN THE STUDENT IN THE SELECTION OF A MEDICAL SCHOOL?

Young men and women entering on the study of medicine may be divided into two general classes. In the first are those who look upon the practice of medicine as a calling in which there must be self-sacrifice, hard work, constant care, and great responsibility. These are ambitious to prepare themselves to the best of their ability for the duties they assume. Their motives are high and noble. In the second class, happily getting smaller each year, are those who look upon the practice of medicine as a calling in which one can make a living without effort and into which entrance is easy. The only ambition of this class is to get a degree with the smallest outlay of time, energy, and money. To these we have no advice to give.

It is of the highest importance that the young man entering on the study of medicine should select a school which will best fit him for his work. The four years he spends in getting his degree will prove to be the most important four years of his life. If the student spends these four years in a medical college whose requirements for entrance are low, whose teachers are mediocre, whose facilities for instruction are poor, whose clinical advantages are inferior, there are nine chances to one that he will go through life a "poor doctor" in more ways than one. One of the laws of physics as applied to hydraulics is that water never rises higher than its source.

The first two years of the medical student's life are more important than the two later years, for in them the scientific foundation is laid. A practitioner must study the practical branches of medicine and surgery all his life and he will obtain clinical experience from every case which he treats, but the fundamental subjects are rarely studied after leaving college. It therefore behooves the student seeking a school to select one that is thoroughly equipped and capable of giving him the best possible instruction in the fundamental branches. Too many make the mistake of selecting for the first two years a school poorly equipped with teachers, with laboratory facilities, etc., with the intention of going to one of the leading colleges for the two later years. This is often done on account of ecomomy, but it is very poor economy. Better wait and save and then start right, for the extra investment thus made will bring satisfactory returns through life.

The better colleges have good laboratory facilities in connection with every fundamental branch, such as anatomy, histology, embryology, pharmacology, bacteriology, etc. They generously equip laboratories with necessary instruments for thorough individual instruction in all these branches. A student must often judge of the worth of an institution by personally examining its facilities for teaching these branches, for sometimes the catalogue will not give him reliable information in this regard.

In the last two years the practical side should be considered: that which applies to the everyday work which

will fall to the young physician when he enters on his practice. To do good practical teaching here, clinical material is necessary. Without these no school can fit the young man in the final two years of his medical studies no matter what facilities it may have aside from them.

Laboratory and clinical facilities being the fundamental necessities, there will come other advantages that are not to be entirely slighted. For instance, the school that has connected with it men of repute, men who have made a name for themselves through investigations and scientific medical work, are to be considered before the schools which have no such men connected with the teaching faculty. While it does not follow that these names in themselves will necessarily make good students—and no one should aim to shine merely by reflected light from his alma mater—there is always an advantage in hearing instruction directly from the recognized masters in the profession. Such men, moreover, are generally appreciative of genuine interest on the part of students and will often give their special aid and attention in such cases.

While every systematic educational course has for its chief end to fit the student to use his mind, in medicine, as in every technical branch, a man must be trained to do as well as to think. Hence, the advantage of hospital training, the "practical year," the importance of which has been so emphasized by Ziemssen and Von Jaksch. Every student should look forward to an interneship as a final crowning of his medical course, and since this is not attainable by all, it is well for him to select a school in which the clinical instruction includes practical hospital work for every student as a dresser or clinical aid. Without some practical experience of this kind the conscientious newly launched practitioner will often feel almost overwhelmed by his responsibilities. The old preceptorial system met this need in a way, though otherwise lacking, the modern medical school in the recent past, if not at present, has too often worked ill in the opposite way by sending out graduates without adequate training under skilled oversight.

It must not be imagined that the good schools are only to be found in the large cities. There are institutions scattered all over the country, whose facilities are excellent, whose teachers are above the average, and who strive to give their students a thorough practical education. Such schools may have moderately small clinical advantages, compared to some in the larger cities; but this apparent lack is made up by there being fewer students to be subdivided into classes for personal instruction and for clinical work at close range. The medical department of some of our state universities, although located in small towns, are splendidly equipped for the first two years' work, even though the same institutions may not be well supplied with clinical advantages. The school, however, which creates in the young man an ambition to study, a craving for knowledge and a desire to keep up the work after he leaves the college, is the one that is to be considered as foremost. Such schools turn out men who become leaders in the profession, and their greatness reflects credit on their alma mater. A school with such credits is a safe one to select.

THE CASE METHOD OF TEACHING.

The case method of teaching which has been incidentally mentioned elsewhere in this issue, while originally elaborated in legal institutions, has also been utilized to advantage in medical instruction. In a crude form it has long been in use; the practice of demanding bedside diagnosis, etc., at clinics is an old one and has been employed by many teachers. The introduction of the fully-elaborated method at the University of Pennsylvania occurred some two years ago, and the details, as followed out in that institution, are given by Frazier in the University *Medical Bulletin* for September.

Each student is given a manifold copy of the complete clinical data of a case in the hospital records, including family history, physical examination, antecedents, blood, urine, sputum, etc., examinations as well as the full history of the disease. He is instructed to prepare a report from these facts including diagnosis, prognosis and treatment; in some cases only one or two of these may be required; in others, special attention is called to the diagnosis, prognosis or treatment. No conclusions are accepted or given credit for unless based on logical reasoning from the facts given. These papers are distributed each Saturday and a report required on the following Saturday. A week later the instructor analyzes the reports before the class, points out their errors and omissions, states what further examination might be conducted to elucidate the case, and gives the subsequent history, results of treatment, etc., as they occurred. As a rule, typical cases are not selected, but those that give the student some exercise of judgment in his diagnosis and they are so chosen as to work into a systematic scheme embracing instances of affections of each important class. Dr. Frazier finds the methods of value in developing the power of discrimination, educating the judgment, encouraging research into authorities, and widening the reading of the student. He also finds that it especially arouses enthusiasm and interest, a point the importance of which is not to be underrated.

It is evident that a plan that presents, as this does, cases as they will occur in actual practice must be more interesting than purely impersonal facts or dry enumeration of symptoms. Instruction in case-taking, which is at least indirectly involved in this method, is also important and perhaps it could not be better given. Though the observations here are ready-made, so to speak, they indicate what ought to be observed and it may be that this will prove to be one of the best adjuncts in the education of the faculties of medical observation.

THE PREPARATION FOR THE MEDICAL COURSE.

When the nation was younger, and the supply of physicians was small, and the demands of a rapidly increasing population for medical attention large, two years was considered sufficient time to equip the raw recruit for the performance of his professional work. The course of instruction at the medical school was, however, preceded and ably supplemented by association with an active practitioner as preceptor, and whose tutelage often constituted a most valuable and highly important factor in the education of the young physician.

This method, in conjunction in some instances with post-graduate study in foreign countries, resulted in a race of physicians who understood especially the art of medicine, and whose labors and results entitle them to the highest meed of respect praise and commendation. As time went on, however, the supply of medical men became ample, and eventually excessive, while at the same time the field of medical knowledge became wider and more difficult of encompassment, so that a fuller measure of learning and a higher degree of proficiency were required of the medical graduate. Thus, a period of study covering three years was declared insufficient, and the present course of four years was established.

With these advances, and by reason of the requirements growing out of them, it became necessary to make entrance upon the study of medicine conditional upon the possession of certain intellectual and scientific qualifications. It thus comes about that in a small, but growing number of medical schools, the post-session of a Bachelor's degree as an indication of adequate preparation has been made the prerequisite of matriculation. Now, it has been found that by this course the graduate of medicine is pretty well on in life when he receives his professional degree, and it is contended, as it seems to us reasonably, that by making a part of the work of the last collegiate year preparatory to that of the medical course at least one year of this long period of study could be saved the student, without detriment either to himself or to the profession of medicine. Elementary work should have no place in the curriculum of the medical school proper, and the student should be thoroughly grounded in such branches as botany, biology, chemistry, physics, etc., apart from the possession of a general education before he is permitted to enter the medical school.

Other things being equal, the best and most broadly educated men and women will make the best and most successful medical students and practitioners. But it is evident that a certain harmonization in our general educational scheme is necessary to give it a unity and a continuity that it has not in the past possessed, but in which, evidence is now accumulating, a good beginning has already been made.

THE TEACHING OF ANESTHESIA IN MEDICAL SCHOOLS.

The contempt bred by familiarity is exhibited by the comparative indifference to danger displayed in the practice of anesthesia. The gravity of narcosis by ether, chloroform, nitrous oxid, ethyl bromid, etc., is not always fully appreciated, although in order to effect the desired result the patient is necessarily brought in varyingly dangerous proximity to the point of dissolution. In view of these facts no special argument should be required to make clear the wisdom, nay, the urgency, of including instruction in both the practice and the principles of anesthesia as an essential part of the medical curriculum. In this spirit there should be given a series of lectures dealing with the physiologic actions and the toxic effects of the various anesthetics employed, and the means for combating the latter should they arise, and laying down the indications for and against individual anesthetics in the presence of varying disturbing factors, together with a demonstration of the various forms of apparatus and their mode of employment, as well as the measures to be taken for resuscitation; and, finally, the student should be required to witness a certain number of narcotizations, and under skilled supervision participate directly in a number of others. As things are at present, the graduate must gain his own experience either in private or in hospital practice, and while fortunately this course is in the overwhelming majority of cases unattended with serious results, these may under certain circumstances be most disastrous. A few hospitals have specially trained anesthetists under whose supervision narcosis is practiced, and it would be a step in advance if all institutions of this character were similarly officered. For these reasons it must be obvious that the practical teaching of anesthesia in the medical schools is an end much to be desired.

THE USE AND ABUSE OF LABORATORIES.

It is a truism that every agency capable of doing good is in equal degree capable of doing harm. The difference resides in the mode of application, or, as with drugs, in the dose. This statement is applicable to laboratory work as it exists in medical education. Knowledge is complex, and isolated facts often have little value, but when correlated with others their importance may become manifest. So the teachings of the laboratory, which can not be considered as final, if not correlated with those of clinical observation and of reading, may be barren and even lead to misconception. Demonstrative instruction is the most impressive, and in so far as the work of the laboratory is directed to a demonstration of normal and morbid processes will it be of practical value. The laboratory student further acquires or develops a spirit of investigation which will stand him in good stead in the scientific study of cases, with the result that his diagnoses will be the more accurate and his treatment the best adapted to the individual case and the most successful in result.

MEDICAL EDUCATION TO-DAY FAR BETTER THAN IN THE PAST.

Unsatisfactory as the condition of medical education in this country has been in the past and many as are the desiderata of the present time, there is ample reason for encouragement. Twenty-eight years ago there was but a single medical school in the country with more than a two-year course, and few even fifteen or eighteen years ago. Now, as shown by tables elsewhere, there are but two in the country that do not demand, or at least profess to demand, four years' attendance before graduation, and of these two, one proposes to adopt the four-year course after 1902. It is true that there may be evasions of the rule and that some institutions may profess more than in fact they perform, but these must be rare exceptions among those recognized as reputable colleges, if they really exist at all. Medical education in this country is a different thing from what it was two decades ago, and there is every prospect that the progress of the recent past will be continued in the future.

Death of President McKinley

Without reproach in life or fear in death, William McKinley, Christian knight and twenty-fifth President of the United States, has passed away.

A fateful fortnight is gliding into its place in history. A cruel assault; a gallant and blameless man stricken; a day or so of gloom and the hot wrath of millions; a day or so of wild joy, with the mirage of health and service luring on; a day or so of fear and foreboding; a smile, a gasp, a woman yearning by; and they who thought to change the rule of man by force began to feel, and long will feel, the dagger of their new dispensation press hard and cold against themselves.

The solemn thunder of the funereal car has ceased; ceased, too, has the sonorous tribute of the minute gun, and the first flood of neighbors' silent tears. The dead, who knowingly wronged no man, is in his grave; and the Nation that is mightier, juster, better for his having lived, sobs "Amen," faces front and marches on.

Few words and simple speech best voice the dead man's requiem. William McKinley had those things and did those things that mark a great man. No extravagant eulogy nor intoxicating rhetoric should cloud or confuse our judgment of the man as he was in his heart. Years ago, when he climbed the first steps of his broad career, he was already an average American. He knew, had sacrificed for, and was helping to get what his country needed to make it one, to make it strong, to make it great among the nations. To the knowledge and deeds of the apprenticeship of this average American came, in richer form, in the harvest years of his mastery, tact, prudence, kindliness, brotherly love, and an abiding purpose and courage to know and do the will of his people and his God. Of such are statesmen whom nations trust and love.

In the category of the great we may write him who sleeps in glorious peace beneath the martyr's palm. He has led a pure life and shone a peerless husband. He has taken up arms for his country. He has put away bitterness from within his party. He has led his countrymen to the conquering stand of a nation that makes, sells, and lends, rather than that of one that begs, borrows, and defaults. He has preached brotherhood and pursued it, and from his touch no wounds smart. He has made war only when he must, and when he has ceased he finds no foe. Triumph has brought new lands and problems of rule without precedent. With his last breath he has warned his brethren that a nation can not live in, upon, and for itself alone; and, hence, for new conditions he has proclaimed new policies. As a man he has been the American's ideal, and higher there is none; as a statesman he has been trustworthy, if not aggressive in initiative. We know he was good; let us err, if err we do, upon the right side and also call him great.

Meantime trade, the Nation's life, halts not, nor falters the Nation's trust in itself and form of government. To the widow of the beloved dead goes out sympathy deep and significant in its universality. Continents and isles mourn with us. Little that has followed in the train of the martyr's fall would we have had unsaid or undone. "God's in His heaven; all's well with the world."

A great man that was loved has fallen. In the crises of time primitive virtues revive and rule. An ancient Roman has passed from among us. Of such they sang:

"Integer vitae, scelerisque purus."

THE WOUNDS OF PRESIDENTS GARFIELD AND M'KINLEY.

Naturally enough, laymen, the lay press and many medical men have compared the wounds of President Garfield and President McKinley since the latter was so brutally murdered on September 6. There is, however, from a surgical standpoint, absolutely nothing similar in the wounds of these illustrious patients. The wound in President Garfield's arm was a flesh wound, as was the one in President McKinley's breast, and can, therefore, be dismissed, as having no bearing upon the result.

The second and fatal wound of President Garfield was fired from the rear, and was made by a 44-caliber bullet, fired from a British bulldog revolver. The result of the autopsy showed how completely the distinguished surgeons in attendance had been deceived as to the real nature of the injury; for instead of passing through the liver, transversing the abdominal cavity, and lodging in the anterior wall, as was thought, the wound was en-

tirely extra-peritoneal. The records of the autopsy leave no room for doubt, for the postmortem was made by the President's eight surgeons themselves and the report signed by all. The official announcement of its results said:

"It was found that the ball after fracturing the right eleventh rib, had passed through the spinal column in front of the spinal canal, fracturing the body of the first lumbar vertebra, driving a number of small fragments of bone into the adjacent soft parts and lodging below the pancreas, about two inches and a half to the left of the spine and behind the peritoneum, where it had become completely encysted.

"The immediate cause of death was secondary hemorrhage from one of the mesenteric arteries adjoining the track of the ball, the blood rupturing the peritoneum and nearly a pint escaping into the abdominal cavity. An abscess cavity, six inches by four in dimensions, was found in the vicinity of the gall-bladder, between the liver and the transverse colon, which were strongly adherent. It did not involve the substance of the liver, and no communication was found between it and the wound. A long suppurating channel extended from the external wound between the loin muscles and the right kidney almost to the groin. This channel, now known to be due to the burrowing of pus from the wound, was supposed during life to be the track of the ball."

While the immediate cause of President Garfield's death is said to have been secondary hemorrhage, such a result was due to a sloughing blood vessel, one of the usual terminations of septic cases. President Garfield had pyemia. His symptoms indicated it; the autopsy proved it. The question has been asked thousands of times during the past few days on account of the favorable bulletins reporting President McKinley's condition, if his distinguished predecessor in office could have been saved by modern surgery. Possibly he could; though it is optimistic and presuming too much to say that such a result would have been, as has so often been said in the recent past, reasonably certain.

A 44-caliber bullet fracturing the rib, then crashing through the body of a lumbar vertebra and driving a number of fragments into the soft parts, thence lodging behind the pancreas, makes a wound and condition not to be despised by even the boldest and deftest of modern operators. Moreover, President Garfield was a very stout man, which would have increased the difficulties. Were such a bullet promptly located to-day by the X-rays, any experienced and conscientious surgeon would hesitate as to his course. If he elected to remove the bullet, again he would be embarrassed to know whether it were best to choose the anterior or posterior route. A laminectomy is a comparatively simple operation in a thin subject; but to reach the body of a vertebra, much less go anterior to it, as would have been necessary to have recovered the ball and removed the spiculæ of bone driven forward by it, in a patient of President Garfield's build, would have taxed both the anatomical knowledge and surgical daring of the greatest of his surgeons, the gifted Agnew. If the anterior route were chosen, one has only to think of the important vessels and nerves superimposed on the bullet, and were almost in contact with it. By either, anterior or posterior route, the danger from hemorrhage would of necessity have been great.

Again, can we say that pyemia has been banished from surgery? Certainly not; rare it is, to be sure, at present; but President Garfield had just the kind of a wound that is to-day, with all our much-vaunted aseptic and antiseptic surgery, difficult to treat and uncertain in its results. Compound fractures, especially of soft bones such as vertebræ and ribs in inaccessible situations, constitute the most fertile cause of pyemia to-day. Moreover, pyemia following bone injuries is admittedly more fatal than pyemia following injury to soft parts. Therefore, there should not have been at the time so much criticism of those brave and skilful men who labored incessantly for nearly three months to save their distinguished patient. Now, that the matter is up again for discussion, it should be the duty of medical men, particularly, to set matters and history right, and not encourage the belief, so very general, that President Garfield's wound, fatal in 1881, would be trivial to-day. It was fatal in 1881 and would probably be fatal in 1901. Mistakes may have been made; but even if they had not been, there is little likelihood that the Nation would have been spared the poignant grief at the brilliant Garfield's untimely taking off and the disgrace of a second murdered president.

President McKinley was shot from the front with a 32-caliber ball entering five inches below the left nipple and one and one-half inches to the left of the median line. It traversed the abdominal cavity, perforating both anterior and posterior walls of the stomach, the opening in the former being small, the one in the latter large and ragged—just the character of wound usually made by a pistol ball at very close range. After thorough closure of the gastric wounds, from which there had been some extravasation, a careful search was made for other possible injuries. None were discovered, and the surgeons were reasonably certain that the bullet had found lodgment in the muscles of the back. The abdominal cavity was freely irrigated with normal salt solution, and closed without drainage by through-and-through sutures of silkworm gut. A small piece of clothing—presumably from the undershirt—had been carried in by the bullet; but was, we understand from the statements given out, found in the abdominal portion of the wound.

In exploring the abdomen, Dr. Mann acted wisely in enlarging the original wound, rather than performing median section. Irrigation of the cavity is to be distinctly commended; likewise the use of interrupted sutures, saving as they do the loss of time, and facilitat-

ing to no inconsiderable degree, when rightly placed, drainage—two very important elements in the President's condition.

Whether or not provision should have been made for further drainage depends entirely upon the existing conditions, and they were best judged by the distinguished surgeons charged with the responsibility of saving, if possible, the most precious life in the world. The profession has had the utmost confidence in each of them; the Nation has shown its gratitude for the promptness with which their awful responsibility was assumed, and the thoroughness and ability with which it was carried out.

If the operation had been hurried there might be some reason to feel that possibly each step of it could not have been considered as judiciously as the occasion demanded. Such was not the case; the President was under ether an hour and a half and was in such good condition all the time that there was no demand made upon the operator for haste. The autopsy shows that good judgment was shown in not prolonging search for the ball.

In declining to use the X-rays subsequently, notwithstanding the general anxiety as to the ball's exact location, the surgeons were judiciously passive and following the teachings of the greatest of military surgeons. A second anesthesia and operation for the extraction of a 32-caliber bullet in the muscles of the back would, under the circumstances, have been not only injudicious, but censurable. One can not forbear to say at this time that the Roentgen rays are not an unmixed blessing, as death has followed operations for encysted bullets that were doing no harm at the time of their removal. One of a yielding nature may be induced to act against his better judgment, on account of the anxiety and importunings of patient and friends, always greater than they should be, but due to an exaggerated importance given by laymen to the "ball" and its recovery. Those who knew the President's surgeons personally have felt assured from the first that no precipitate action would be taken to meet a danger largely chimerical in its nature, whilst urgent, portentous, awful problems were pressing forward for solution.

What were the probabilities when it was known that President McKinley, a man 58 years old, with a weak heart, had sustained a penetrating wound of the abdomen? Death, undoubtedly, was the likelier issue. When, however, the details of the operation were given Saturday morning, and it was recalled that the President was shot at 4:30 in the afternoon, when his stomach was presumably empty, or nearly so, more than a modicum of comfort and hope was felt by a stricken Nation. The operation had been promptly done; it had been thoroughly well done; it had been done by the best exponents of modern surgery. The incidents of the first, second, and third days—the period of greatest danger—were distinctly favorable to the President's recovery, though his abnormally high pulse-rate caused uneasiness. It had all along been out of proportion to the temperature and respirations, but it was explained as being usual with him. The fourth and fifth days served only to fortify his surgeons in the opinion already expressed that he would recover. It seemed that he would and that he should get well; yet there were still dangers ahead to which a too hopeful and impulsive people were oblivious. They came on the sixth day and had practically ended this magnificent life in another twenty-four hours!

Of the exact causes leading to the change which resulted in death, we shall know more when the full report of the autopsy is published. This will be after cultures have been made and a histological examination has been completed. When this full scientific report is officially given out it will be time to discuss the cause which led to the necrotic condition found at the autopsy but not before. Until then at least there should be no criticism of the management of the case and full credence should be given to the official bulletins signed by the attending surgeons and to these only. The absence from Buffalo of the nearest relatives of President McKinley at the time of the unfavorable change showed plainly enough that they had left him doing so well that only recovery was thought of. The public were fairly and candidly treated from beginning to end. The unexpected happened. While the Nation grieves as it has never done before on account of the pathetic and unusual circumstances surrounding President McKinley's death, we should give full credit and honor to the heroic surgeons who, with a moment's notice, gave to the President of the United States everything that science had to offer. As we think so will the lay press, his countrymen and the world.

The criticisms of 1881 are not, we hope, to be repeated. The courageous action of Dr. Mann and his associates in performing an immediate laparotomy is more to be commended now than it would have been three years ago; for since our war with Spain and the Anglo-Boer war in South Africa non-intervention in gunshot wounds of the abdomen has been the rule in military surgery. A masterly inactivity in such injuries has had the weighty endorsement of Senn, Nancrede, Lagarde, Parker, and other surgeons of prominence in our army, and Treves, Sir William MacCormac, and others of the English surgical staff. Many of the *supposed* perforating wounds of the abdominal cavity in the American and English armies recovered without operation. A rule which is applicable and proper in military surgery can not always be accepted in civil practice. The wounds are different; the facilities and environments are different. The modern rifle-ball is small, conical, .303 of an inch in caliber, of great velocity, and cuts like a knife. Such a wound occurring in soldiers with comparatively empty gastro-intestinal tracts—brought about by starvation and diarrhea, com-

mon conditions in soldiers—might be recovered from; whereas, a pistol ball which is usually larger, rounder and of less velocity, makes a greater and more ragged opening, through which extravasation from any of the hollow viscera injured would almost surely take place. It is also far more likely to carry in clothing and other foreign material which would have a tendency to cause irritation and even sepsis.

It is of interest to recall the fact that the first successful laparotomy for a shot wound of the abdomen was a pistol shot wound of the stomach, successfully operated on by Kocher of Berne in 1884. Kinloch of South Carolina had previously (1882) unsuccessfully operated on a case of multiple wounds of the small intestines. The first successful laparotomy for an intestinal wound was by W. T. Bull in 1884.

While the prompt, commendable and praiseworthy surgery at Buffalo did not result as it deserved to, in the recovery of President McKinley, it has placed the treatment of gunshot wounds of the abdomen upon a firmer and better footing than ever before; just at a time, too, when it had suffered a partial eclipse, on account of the teachings of military surgeons; teachings which are right for the battlefield and emergency hospitals, with their poor equipment for abdominal work, but wrong when one can have the benefit of timely aid from a competent abdominal surgeon in a well-equipped modern hospital.

If in dying, this great and good man has advanced the cause of surgery, and has been the means of exterminating anarchy in the country he loved and served so well, then he will not have suffered and died in vain!

NO DISAGREEMENT AMONG THOSE WHO ATTENDED PRESIDENT McKINLEY.

The undersigned surgeons and physicians who were in attendance on the late President McKinley have had their attention called to certain sensational statements recently published in the daily papers, and particularly one New York paper, indicating dissensions and mutual recriminations among them.

We desire to say to the press and public, once for all, that every such publication and all alleged interviews with any of us containing criticism of one another or of any of our associates are false, and are nothing but scandal-mongering.

We say again that there was never a serious disagreement among the professional attendants as to any of the symptoms or as to the treatment of the case or as to the bulletins which were issued. A very unusual harmony of opinion and action prevailed all through the case.

The unfortunate result could not have been foreseen before the unfavorable symptoms declared themselves late on the sixth day and could not have been prevented by any human agency.

Pending the completion and publication of the official reports of the postmortem examiners and attending staff, we shall refuse to make any further statements for publication and alleged interviews with any of us may be known to be fictitious. MATTHEW D. MANN; ROSWELL PARK; HERMAN MYNTER; EUGENE WASDIN; CHARLES G. STOCKTON.

Buffalo, Sept. 17.

MANAGEMENT OF THE CASE OF PRESIDENT M'KINLEY.

It is not unusual for physicians or surgeons to make mistakes in judgment and therefore it often occurs, when a case is ended and death supervenes, that those who have been in attendance look back and wish they had done a little differently here or there. Such things are liable to occur until the time comes when human judgment is infallible. But reviewing the facts of President McKinley's case from the beginning, so far as they have come to us from reliable sources, and supplementing the reports by all that we can reasonably surmise, we see no reason for the slightest criticism of the surgical and medical treatment. Whatever medical science could do at the present time was apparently done. The administration of a minute quantity of

solid food on Wednesday, which has been criticised, appears to us to have been perfectly justifiable and that it could have had no ill effect is sufficiently proven by the autopsy. From the prompt acceptance of responsibility by the surgeons at the beginning to the last sad phase there is nothing in the conduct of the case that calls for self-reproach on their part or justifies criticism of their course by others. It shows more prominently than many cases our limitations and is in this way humiliating, but this does not in any way detract from the services of those who did all that human wisdom and ability could do.

When on Friday morning announcement was made of the relapse which had taken place, those in charge were criticised for the supposed optimistic reports that had been circulated. Before criticising, however, it would be well to inquire whether criticism was just. Physicians who have been interviewed know that the report of what they say is more likely than not to be incorrectly given to the public. Those connected with this case have disclaimed responsibility for what appeared in the newspapers both before and since the President's death. Our reporter called on three of them for information for this journal and they justly refused to make any statement outside of the official bulletins. If they were expressing opinions to the newspaper reporters, they certainly would not have held them back from the medical journals. Dr. Roswell Park denied on Thursday morning, the day before the relapse, a previous newspaper report crediting him with having expressed a belief in the certain recovery of the President.

Others of the Buffalo surgeons also have repeatedly denied any responsibility for statements attributed to them in the papers. Drs. Mann and Park, we are authoritatively informed, have stated that at no time were they free from anxiety, and it is probable that the same can be said of the others, with possibly one exception.

The surgeons should be held responsible for the official bulletins which they signed and for these only. These show no utterance of absolute confidence in recovery. Rather, the continued high pulse was indicative to members of the profession that all was not as it should be. We therefore see no reason for criticism on this point. When the facts are made known it will probably be found that some symptoms were present that were not what might have been desired, but it would have been just as unwise to have given publicity to this indication of possible danger as to give the optimistic opinions that were unjustly credited to some of the surgeons. The editorial opinion expressed in the last issue of THE JOURNAL regarding the official and other statements of the attending surgeons is still held as the only one justified by the facts.

When the full official report of the autopsy is published comments may be made regarding the gangrenous condition found in the track of the bullet. It would be merely theorizing to discuss the subject before the bacteriological and the histological examination has been made and the findings published.

THE SHOOTING OF THE PRESIDENT.

(From our Correspondent.)

BUFFALO, N. Y., September 17, 1901.

The feeling of security for the recovery of the illustrious patient which the attending surgeons had was of only brief duration. From the time of operation the pulse was rapid and gave great concern to the attendants. This was at first supposed to be due to the shock from the wound and operation, especially when it was seen that the great sympathetic nervous system and its solar plexus was in the line of the track of the second bullet. The continuance of the high pulse, however, compelled the discarding of this theory. The question of peritoneal sepsis then arose; but there was no abdominal tenderness, no meteorism and no muscular retraction; as peristalsis was present, as the temperature fell instead of rising, and the pulse kept high, and as, furthermore, the examination of the blood made by Dr. Wasdin showed no leucocytosis, this cause was excluded.

During Tuesday of last week it was noted that the nutritive enemata gave the President a good deal of discomfort and were not retained. Broths were, therefore, ordered to be given in small amounts by the mouth, and on the following day a bit of toast was given. The bowels had not moved on that day and as the heart action still remained unsatisfactory it was thought expedient by the surgeons in charge to call Dr. Charles G. Stockton in consultation.

The question next arose whether the high pulse might not be dependent on intestinal toxemia. A considerable amount of indican was found on examination of the urine, but it diminished greatly when, as the result of cathartics, several evacuations had occurred. Nevertheless the high pulse continued. The increasing weakness during Wednesday night and Thursday resulted in the calling of Drs. William W. Johnson of Washington, D. C., and Edward G. Janeway of New York City, in consultation.

Despite heart stimulants, digitalis, adrenalin, normal salt transfusion and oxygen inhalations, the heart's action became weaker and weaker, and because there was no reaction from all the stimulation, the President's condition became one of utter hopelessness. It was expected that he would die during Friday but he survived until 2:15 Saturday morning.

He suffered little pain, and his sturdy faith, courage and bravery continued to the end. Dr. Mynter says of him: "The fortitude, courage, cheerfulness, and gentle consideration toward all his attendants, the doctors, nurses and orderlies, was remarkable. The martyred President won the love affection and admiration of everyone who had the privilege of administering to his wants during those seven sad days."

THE POSTMORTEM EXAMINATION.

The autopsy was held at the Milburn house at 11 a. m., Saturday, September 14. The examination was made by Dr. Harvey R. Gaylord, of the New York State Cancer Laboratory, assisted by Dr. Herman G. Matzinger, professor of clinical pathology in the University of Buffalo. Major W. B. Kendall, surgeon U. S. A., Fort Porter, and Captain Edward L. Munson, assistant surgeon, U. S. A., of the Brigade Hospital represented the

Government. Drs. Mann, Mynter, Park, Wasdin, Rixey, Stockton, Janeway, Johnson, Cary, and Baer, and the District Attorney and a stenographer were also present.

The following were the findings of the autopsy: Rigor mortis. The wound on the chest consisted of a blackish-yellow abrasion, surrounded by a large zone of discoloration. The point of impact of the first bullet was between the second and third ribs, just at the right edge of the sternum. Incision through the tissues at this point showed a moderate blood infiltration, extending to the muscle, and immediately under the point of impact, a small cavity was seen, the size of a pea, where the skin had been torn away from the subcutaneous tissue.

On opening the abdomen, the wall of which was two and one-half or three inches in thickness, the omentum was found adherent all around the wound of operation. This wound was five inches long, extended down to the muscle and was healthy in appearance, no gangrene being present. The omentum was healthy and no signs of peritonitis were evident. The intestines were smooth and shiny without adhesions or exudate. The mesentery of the transverse colon was adherent to the stomach wound. On loosening these adhesions, the sutures of the wounds of the anterior and posterior walls of the stomach were found tight and in place, allowing no leakage.

Around the sutures, however, there was a zone of total gangrene of the wall of the stomach about two inches in diameter and ready to slough. A similar gangrenous condition was found on the opposing surface and adherent mesentery of the transverse colon, the necrosis extending into the head of the pancreas.

From the wound in the posterior wall of the stomach it was found that the bullet passed through the transverse mesocolon, near its attachment, thence through the posterior layer of peritoneum, cutting a groove into the upper end of the left kidney, and entering the retro-renal fatty tissue. The whole track of the bullet presented the appearance of a gangrenous hole, the gangrene in the retro-renal tissue being of the size of a fist. From this point the bullet passed into the posterior muscular tissue and could not be found, although careful search was made for four hours.

The heart was small, covered and infiltrated with fat, and the muscular walls were thinned. One dram of a turbid yellow serum was found in the pericardial cavity, but there was no evidence of injury of the heart, nor was pericarditis present. The kidneys were somewhat contracted, but all the other organs were normal.

THE CAUSE OF DEATH.

The necropsy showed that death was the result of sepsis due to gangrene resulting from the wound and that it could not have been avoided. Had the President lived twenty-four hours longer the gangrenous area around the stomach would have sloughed and death would have resulted from diffuse peritonitis.

The result of the operation so far as it went was perfect. No peritonitis was present, no particles of food were found outside of the stomach, but Nature had made no effort to repair the injury.

About twenty-four cultures were taken from the pericardium blood, right auricle, the healthy parts of the peritoneum, and along the entire gangrenous track.

REMARKS.

There has been much lay criticism because of the small bit of toast which the President was allowed to have on Wednesday morning, and these criticisms credit intestinal toxemia to its ingestion. Nothing was ordered for the President without the concurrence of all the surgeons in attendance, and the report of the autopsy just given demonstrates that the toast could have had absolutely no effect on the outcome of the case.

Towards the last, the surgeons were inclined to believe that the wound from the first bullet on the sternum might have produced a contusion of the heart with a probable myocarditis or pericarditis from which the high pulse-rate might be due, but this hypothesis also was not borne out by the findings of the autopsy. It was at one time suggested that the President had a tobacco heart, but as he smoked only three or four cigars a day this is very unlikely.

The question whether or not the bullet was poisoned is attracting considerable attention just now. It could not have been poisoned with curare as was suggested, since this agent produces a rapid paralysis of the heart. The claim that it might have been steeped in a culture of virulent bacteria is ingenious, and Dr. Mynter says that if it had been dipped in a pure culture of pyogenic bacteria, just such a wound might have been produced. The three remaining cartridges are in the hands of Dr. Herbert Hill, the city chemist, who will make a chemical analysis, and Dr. Herman Matzinger will make a bacteriologic examination.

It has also been suggested that the necrosis might be accounted for by the injury to the pancreas and the leakage of pancreatic juice. Dr. Park considers this possible and refers to the work of Williams, Flexner and Opie in this direction.

The surgeons disclaim many reports in the lay press reported as coming from them. The official report will not be ready until next week. The bacteriologic examination of cultures taken and the microscopic examination of sections of tissues are not yet completed. The lack of leucocytosis in the blood-count may be attributed to lack of reaction in the repair of the wound. All the samples of urine taken were negative with the exception of that obtained after the operation, which, it is reported on good authority, showed hyaline casts but with a normal amount of urea and with no albumin reaction. This was considered to be possibly due to ether.

OFFICIAL BULLETINS.

BUFFALO, Sept. 6, 7 P. M.—The President was shot about 4 o'clock. One bullet struck him on the upper portion of the breastbone, glancing and not penetrating. The second bullet penetrated the abdomen five inches below the left nipple and one and one-half inches to the left of the median line. The abdomen was opened through the line of the bullet wound. It was found that the bullet had penetrated the stomach. The opening in the front wall of the stomach was carefully closed with silk stitches, after which a search was made for a hole in the back wall of the stomach. This was found and also closed in the same way. The further course of the bullet could not be discovered, although careful search was made. The abdominal wound was closed without drainage. No injury to the intestines or other abdominal organ was discovered. The patient stood the operation well. Pulse of good quality, rate of 130. Condition at the conclusion of the operation was gratifying. The result can not be foretold. His condition at present justifies hope of recovery.—George B. Cortelyou, Secretary to the President.

10:40 P. M.—The President is rallying satisfactorily and is resting comfortably. Temperature 100.4 degrees; pulse, 124; respiration, 24.—P. M. Rixey, M. B. Mann, R. E. Park, H.

Mynter, Eugene Wasdin, George B. Cortelyou, Secretary to the President.

BUFFALO, Sept. 7, 1 A. M.—The President is free from pain and resting well. Temperature, 100.2; pulse, 120; respiration, 24.

3 A. M.—The President continues to rest well. Temperature, 101.6; pulse, 110; respiration, 24.—P. M. Rixey, George B. Cortelyou, Secretary to the President.

6 A. M.—The President has passed a good night; temperature, 102; pulse, 110; respiration, 24.—P. M. Rixey, Roswell Park, George B. Cortelyou, Secretary to the President.

9 A. M.—President passed a fairly comfortable night and no serious symptoms have developed. Pulse, 146; temperature, 102; respiration, 24.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, George B. Cortelyou, Secretary to the President.

12 M.—There is no decided change in the President's condition since last bulletin. Pulse, 136; temperature, 102; respiration, 28.—P. M. Rixey, George B. Cortelyou, Secretary to the President.

3:30 P. M.—The President continues to rest quietly; no change for the worse. Pulse, 140; temperature, 102.2; respiration, 24.—P. M. Rixey, M. D. Mann, Roswell Park, H. Mynter, Eugene Wasdin, George B. Cortelyou, Secretary to the President.

6:30 P. M.—There is no change for the worse since last bulletin; pulse, 130; temperature, 102.5 degrees; respiration, 29. —P. M. Rixey, George B. Cortelyou, Secretary to the President.

9:30 P. M.—Conditions continue much the same. The President responds well to medicine. Pulse, 132; temperature, 102.5; respiration, 25. All temperatures reported are taken in the rectum. The physicians in attendance wish to say that they are too busily engaged to repy to individual telegrams.—P. M. Rixey, Roswell Park, H. Mynter, Eugene Wasdin, George B. Cortelyou, Secretary to the President.

BUFFALO, September 8.—The public will be kept fully advised of the actual condition of the President. Each bulletin is carefully and conservatively prepared and is an authoritative statement of the most important features of the case at the hour it is issued. The people are entitled to the facts and shall have them.—George B. Cortelyou, Secretary to the President.

3:20 A. M.—The President has passed a fairly good night; pulse 122; temperature 102.4 degrees; respiration 24.—P. M. Rixey, H. Mynter, George B. Cortelyou, Secretary to the President.

9 A. M.—The President passed a good night and his condition this morning is quite encouraging. His mind is clear and he is resting well; wound dressed at 8:30 and found in a very satisfactory condition. There is no indication of peritonitis. Pulse 132; temperature 102.8; respiration 24.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, George B. Cortelyou, Secretary to the President.

12 M.—The improvement in the President's condition has continued since last bulletin; pulse 128; temperature 101 degrees; respiration 27.—P. M. Rixey, George B. Cortelyou, Secretary to the President.

4. P. M.—The President since the last bulletin has slept quietly, four hours altogether since 9 o'clock. His condition is satisfactory to all the physicians present. Pulse 128; temperature 101; respiration 28.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles McBurney, George B. Cortelyou, Secretary to the President.

9. P. M.—The President is resting comfortably and there is no special change since last bulletin. Pulse 130; temperature 101.6; respiration 30.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles McBurney. George B. Cortelyou, Secretary to the President.

BUFFALO, September 9, 6 A. M.—The President passed a somewhat restless night, sleeping fairly well. General condition unchanged. Pulse, 120; temperature, 101; respiration, 28.—P. M. Rixey, M. D. Mann, George B. Cortelyou, Secretary to the President.

9:20 A. M.—The President's condition is becoming more and more satisfactory. Untoward incidents are less likely to occur. Pulse, 122; temperature, 100.8 degrees; respiration, 28.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles McBurney, George B. Cortelyou, Secretary to the President.

3 P. M.—The President's condition steadily improves and he is comfortable, without pain or unfavorable symptoms. Bowel and kidney functions normally performed. Pulse, 113; temperature, 101; respiration, 26.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles McBurney, George B. Cortelyou, Secretary to the President.

9:30 P. M.—The President's condition continues favorable. Pulse, 112; temperature, 101; respiration, 27.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles McBurney, George B. Cortelyou, Secretary to the President.

BUFFALO, September 10, 7 A. M.—The President has passed the most comfortable night since the attempt on his life. Pulse, 118; temperature, 100.4; respiration, 28.—P. M. Rixey, Roswell Park, George B. Cortelyou, Secretary to the President.

9 A. M.—The President's condition this morning is eminently satisfactory to his physicians. If no complications arise a rapid convalescence may be expected. Pulse, 104; temperature, 99.8; respiration, 26. This temperature is taken by mouth and should be read about one degree higher by rectum.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles McBurney, George B. Cortelyou, Secretary to the President.

3:20 P. M.—There is no change since this morning's favorable bulletin. Pulse, 110; temperature, 100; respiration, 28. —P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, George B. Cortelyou, Secretary to the President.

10:30 P. M.—The condition of the President is unchanged in all important particulars. His temperature is 100.6; pulse, 114; respiration, 28. When the operation was done on Friday last it was noted that the bullet had carried with it a short distance beneath the skin a fragment of the President's coat. This foreign material was, of course, removed, but a slight irritation of the tissues was produced, the evidence of which appeared only to-night. It has been necessary on account of this slight disturbance to remove a few stitches and partially open the skin wound. This incident can not give rise to other complications, but it is communicated to the public, as the surgeons in attendance wish to make their bulletins entirely frank. In consequence of this separation of the edges of the surface wound the healing of the same will be somewhat delayed. The President is now well enough to begin to take nourishment by the mouth in the form of pure beef juice.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Charles McBurney, George B. Cortelyou, Secretary to the President.

BUFFALO, September 11, 6 A. M.—The President has passed a very comfortable night. Pulse, 120; temperature, 100.2; respiration, 26.—P. M. Rixey, Eugene Wasdin, George B. Cortelyou, Secretary to the President.

9 A. M.—The President rested comfortably during the night. Decided benefit has followed the dressing of the wound made last night. His stomach tolerates the beef juice well, and it is taken with great satisfaction. His condition this morning is excellent. Pulse, 116; temperature, 100.2.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles McBurney, George B. Cortelyou, Secretary to the President.

3:30 P. M.—The President continues to gain and the wound is becoming more healthy. The nourishment taken into the stomach is being gradually increased. Pulse, 120; temperature, 100.2.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles McBurney, George B. Cortelyou, Secretary to the President.

10 P. M.—The President's condition continues favorable. Blood count corroborates clinical evidence of absence of any

blood poisoning. He is able to take more nourishment and relish it. Pulse, 120; temperature, 100.4.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles McBurney, George B. Cortelyou, Secretary to the President.

BUFFALO, September 12, 6:20 A. M.—The President has had a comfortable night. Pulse, 122; temperature, 100.2.—P. M. Rixey, George B. Cortelyou, Secretary to the President.

9:30 A. M.—The President has spent a quiet and restful night, and has taken much nourishment. He feels better this morning than at any time. He has taken a little solid food this morning and relished it. Pulse, 120; temperature, 100.2 degrees.—P. M. Rixey, Roswell Park, Herman Mynter, Eugene Wasdin, M. D. Mann, Charles McBurney, George B. Cortelyou, Secretary to the President.

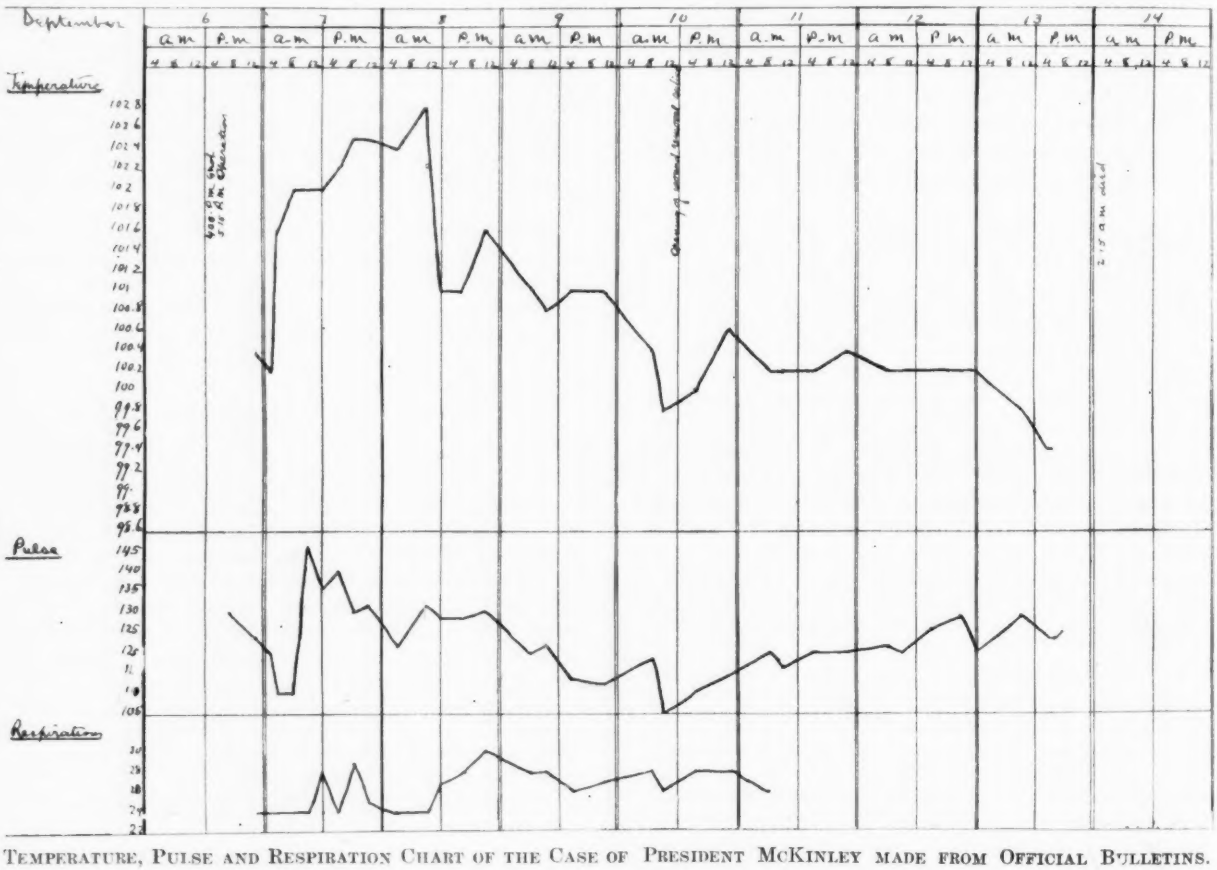
3 P. M.—The President's condition is very much the same as this morning. His only complaint is of fatigue. He continues to take a sufficient amount of food. Pulse, 126; temperature, 100.2 degrees.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, George B. Cortelyou, Secretary to the President.

piration, 30; temperature, 100.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles G. Stockton, George B. Cortelyou, Secretary to the President.

9 A. M.—The President's condition has somewhat improved during the past few hours. There is a better response to stimulation. He is conscious and free from pain. Pulse, 128; temperature, 99.8.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles G. Stockton, George B. Cortelyou, Secretary to the President.

2:30 P. M.—The President has more than held his own since morning, and his condition justifies the expectation of further improvement. He is better than yesterday at this time. Pulse, 123; temperature, 99.4.—P. M. Rixey, M. D. Mann, Herman Mynter, Eugene Wasdin, Charles G. Stockton, George B. Cortelyou, Secretary to the President.

4 P. M.—The President's physicians report that he is only slightly improved since the last bulletin. The pulse and temperature remain the same as at that hour.—George B. Cortelyou, Secretary to the President.



TEMPERATURE, PULSE AND RESPIRATION CHART OF THE CASE OF PRESIDENT MCKINLEY MADE FROM OFFICIAL BULLETINS.

8:30 P. M.—The President's condition this evening is not quite so good. His food has not agreed with him and has been stopped. Excretion has not yet been properly established. The kidneys are acting well. His pulse is not satisfactory, but has improved in the last two hours. The wound is doing well. He is resting quietly. Temperature, 100.2; pulse, 128.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles G. Stockton, George B. Cortelyou, Secretary to the President.

12 M.—All unfavorable symptoms in the President's condition have improved since the last bulletin. Pulse, 120; temperature, 100.2.—P. M. Rixey, Eugene Wasdin, Charles G. Stockton, George B. Cortelyou, Secretary to the President.

BUFFALO, September 13, 2:50 A. M.—The President's condition is very serious and gives rise to the gravest apprehension. His bowels have moved well, but his heart does not respond properly to stimulation. He is conscious. The skin is warm and the pulse small, regular, easily compressible and 126; respiration, 30; temperature, 100.—P. M. Rixey, M. D. Mann, Roswell Park, Herman Mynter, Eugene Wasdin, Charles G. Stockton, George B. Cortelyou, Secretary to the President.

5:35 P. M.—The President's physicians report that his condition is grave at this hour. He is suffering from extreme prostration. Oxygen is being given. He responds to stimulants but poorly. Pulse, 125; respiration, 40.—George B. Cortelyou, Secretary to the President.

6:30 P.M.—The President's physicians report that his condition is most serious in spite of vigorous stimulation. The depression continues and is profound. Unless it can be relieved the end is only a question of time.—George B. Cortelyou, Secretary to the President.

9:30 P. M.—"The President is dying."

BUFFALO, September 14, 2:15 A. M.—"The President is dead."

BUFFALO, September 14.—Autopsy.—The bullet which struck over the breastbone did not pass through the skin and did little harm. The other bullet passed through both walls of the stomach near its lower border. Both holes were found to be perfectly closed by the stitches, but the tissue around each hole had become gangrenous. After passing through the

stomach the bullet passed into the back walls of the abdomen, hitting and tearing the upper end of the kidney. This portion of the bullet track was also gangrenous, the gangrene involving the pancreas. The bullet has not yet been found. There was no sign of peritonitis or disease of other organs. The heart walls were very thin. There was no evidence of any attempt at repair on the part of nature, and death resulted from the gangrene which affected the stomach around the bullet wounds as well as the tissues around the further course of the bullet. Death was unavoidable by any surgical or medical treatment, and was the direct result of the bullet wound.—Harvey D. Gaylord, M.D.; Herman G. Matzinger, M.D.; P. M. Rixey, M.D.; Matthew D. Mann, M.D.; Herman Mynter, M.D.; Charles Cary, M.D.; Edward L. Munson, Assistant Surgeon United States Army; Roswell Park, M.D.; Eugene Wasdin, M.D.; Charles G. Stockton, M.D.; Edward G. Janeway, M.D.; W. W. Johnston, M.D.; W. P. Kendall, Surgeon United States Army; Hermanus L. Baer, M.D.

Medical News.

[Because of the large amount of Educational matter, and likewise of that on the death of the President, a considerable portion of our regular Departments has been crowded out.]

ILLINOIS.

Dr. **Andrew H. Kimbrough,** Danville, is seriously ill as the result of a paralytic stroke.

The **new hospital at Elgin,** which was to have been opened September 1, by the Sisters of St. Joseph, is not yet ready, and the opening has been postponed indefinitely.

Smallpox is reported from East Hillsboro, and from Champaign County near Tolono. In the first case the infection is supposed to have been received at Alton, and in the second at Peoria.

Chenoa **Doctors Raise Rates.**—At a meeting of the physicians of Chenoa it was decided that to be in harmony with the physicians of McLean and Livingston counties all fees charged would be the same as agreed upon by the medical societies of the two counties.

Personal.—Dr. Babcock Meloy has succeeded to the practice of the late Dr. Katharine Miller, Lincoln.——Dr. William C. Dixon, Terre Haute, has moved to Canton.——Dr. Emerson M. Sutton, Peoria, has returned from Europe.——Dr. Isaac B. Ennis, Martinton, has located in Gilman.——Dr. J. Frank Wilson, Versailles, has moved to Bluffs.——Dr. Edmund Ludlow, Paxton, has gone to Denver, Colo., to practice.——Dr. Edward D. Howland, Lockport, has moved to Chicago.——Dr. William K. Farley, Waterman, has gone to Oregon.——Dr. and Mrs. William D. Nelson, Jr., Marietta, have gone to Europe for study.——Dr. Edward C. Lemen, Jr., Upper Alton, has been commissioned assistant surgeon of Volunteers, with the rank of captain, and assigned to the Eighth Infantry, U. S. army.

Chicago.

The **Chicago Eye, Ear, Nose and Throat Hospital** has provided a number of free beds for charity patients.

To **Sterilize Pencils.**—Dr. Arthur R. Reynolds, commissioner of health, has recommended the sterilization of pencils used in the public schools.

Baptist Hospital Changes.—Dr. Reuben Peterson has resigned as gynecologist, and Dr. Palmer Findley has been appointed in his stead.——Dr. A. E. Halstead has been appointed to the surgical staff and Dr. Charles E. Paddock obstetrician.

Scariet Fever in Rogers Park.—There are now 55 cases of scarlet fever in this suburb with two deaths, and the Health Department has been forced to threaten to station policemen at the doors of infected houses unless the quarantine is more strictly observed.

New **Hospital.**—The new hospital of the Sisters of Mary, erected at a cost of $250,000, is nearing completion. The structure is six stories high, fire-proof, of cut stone and pressed brick, with strikingly high porticoed entrances. The ground dimensions are 196 by 87 feet. The operating rooms are on the top floor. On the north and south sides of the building are inclosed porches, which can be so heated as to be habitable the year around.

Personal.—Dr. Robert A. McArthur has returned from his summer vacation.——Dr. James Nevins Hyde has returned from his summer vacation in Salem.——Dr. and Mrs. Julian E. Hequembourq have returned from a month's visit to the Massachusetts coast.——Dr. Emma Morgan has located in Rock Island.——Dr. Paul E. N. Greeley has moved to Waterman.——Dr. James M. Lyons has opened an office in Lockport.——Dr. H. R. Struthers has located in Martinton.

Banquet to Dr. N. S. Davis, Sr.—The Chicago Medical Society is arranging to tender a banquet to Dr. N. S. Davis, at the Auditorium Hotel, Chicago, Saturday evening, October 5. Dr. Davis is the oldest living ex-president of the Society, one of the founders and the oldest living ex-president of the American Medical Association, widely known and highly respected by the profession of the whole country, and a man who has always stood out for the best interests of the American medical profession. He deserves all the honors that any society can confer on him.

Anthrax.—The recent outbreak of anthrax at Palatine, and its increasing prevalence in the surrounding country, which is largely devoted to dairying interests, prompted the health commissioner to send the secretary of the department, together with one of its meat inspectors—an expert veterinarian—to that section to investigate the existing conditions. As a result, and at the suggestion of the representatives of the department, the farmers throughout the infected district have formed a local association for the purpose of stamping out the disease and preventing its further spread. This association, through its officers, has pledged the department that no milk or veal calves or beef cattle will be shipped from any of the infected herds. In view of these pledges, and the thoroughly reliable character of the men who made them, it was not deemed necessary on the part of the city to establish any quarantine against the food supplies from this district. It is believed that with the enforcement of the measures now under way the present outbreak will soon be under control.

The Smallpox Situation.—The Health Department points out that in the group of states of which Illinois is the center and with which Chicago is in most immediate and constant communication, there have been, during the first 36 weeks of this year, a total of 15,373 cases of smallpox reported, as against a total of only 5620 cases reported during the corresponding period of 1900. This is an increase of 273 per cent. in Northwestern states as against an increase of less than 75 per cent. in the rest of the country. In the state at large, outside of Chicago, there have been fewer cases—229—this year than last—250—but in the city itself there have been 248 cases this year, as against only 51 last year. This great increase—nearly five times more than last year—is due, of course, to the repeated importations from the surrounding infected territory, and while no new case has been discovered since August 12, and the city has been free from the disease since August 28, it is not to be expected that further importations can be prevented during the fall and winter. The experience in New York City forbids such hope; there they have had this year, up to the close of August, 1831 cases and 370 deaths—as against Chicago's 248 cases and 2 deaths. The lesson of these facts and figures is that Chicago is more exposed now than a year ago, and that individuals not properly protected by vaccination are in greater danger of contracting smallpox now than then.

INDIANA.

Typhoid fever in Muncie is reported to be much more fatal than usual and, it is said, is not water but mosquito borne.

Dr. Brose S. Horne, Bluffton, has been appointed physician of the state penitentiary at Michigan City, vice Dr. Alva L. Spinning, resigned.

A Methodist hospital and deaconess' home to cost not less than $200,000 is to be built in Indianapolis on land recently purchased at 29th and Illinois streets.

Dr. Baker's Death.—The faculty of the Medical College of Indiana has passed resolutions expressing the loss sustained by the college in the death of Dr. Philip S. Baker, who for many years had held the chair of chemistry.

Personal.—Dr. Samuel M. Reid has resigned as city health officer of Muncie.—Dr. Brook B. Freeman, Valparaiso, is critically ill with dropsy.—Dr. Frank Songer, Hillsboro, who has been ill for five months, will spend the winter in Florida.—Dr.

Frank H. Wilcox, New Albany, has been elected township physician.

KANSAS.

Smallpox.—The Secretary of the State Board of Health reports that at the end of August there were less than a dozen cases of smallpox in the state, in five localities. On September 2 two new cases of the disease were discovered in Topeka.

Personal.—Dr. B. W. Toothaker will remove from Westmoreland to St. Joseph, Mo.—Dr. Edward Trachsell, Meriden, has moved to Denver, Colo.—Dr. Carroll Montgomery has decided to remain in Manhattan, and assume charge of the practice left by his father.

New Medical Law.—The registration of physicians prior to the date the new medical law went into effect amounted to 2300 of the 2600 physicians estimated to be in the state. Of these about 1600 presented diplomas from reputable medical colleges; 100 had certificates from other states; 400 were admitted under the seven-year practice clause and the remainder took the prescribed examination.

MICHIGAN.

A "Christopathic" sanatorium is the latest addition to the roll of sanatoria in Battle Creek.

Personal.—Dr. D. E. Newcomb, Carleton, was stricken with paralysis September 6, and is in a precarious condition.—Dr. Abiel S. Martin, Vicksburg, intends to locate in Otsego. —Dr. P. H. Wilson, Hancock, has been appointed physician to Baltic mine.

Transportation of Bodies.—At a special meeting of the State Board of Health a rule was adopted providing that all bodies, without regard to cause of death, will be subject to transportation, when prepared by licensed embalmers in accordance with the rules of the State Board. In all states with the exception of Michigan, the transportation of bodies dead from smallpox, Asiatic cholera, yellow fever, typhus fever or bubonic plague, is absolutely forbidden. By permitting the transportation of such bodies in Michigan, the qualifications of licensed embalmers are recognized. The detailed rules in caring for such bodies will insure the public health against contagion from these bodies.

NEW YORK.

Personal.—Dr. Homer E. Smith, Norwich, has returned from his trip to South America.—Dr. Homer C. Tarbell, West Groton, has opened an office in Groton.—Dr. James King, Buffalo, who has been in Vienna for the past five months, is now in London, England.

State Antitoxin Laboratory.—A building has been secured for the establishment of a state antitoxin laboratory in Albany and Dr. H. D. Pease, of the Sheffield Scientific School, Yale University, has been appointed director. The animal house will be provided with the most perfect hygienic conditions attainable for such purposes, and will be supplied with about 15 horses for the manufacture of serum. The Commissioner of Health proposes to supply state institutions with diphtheria and other antitoxins free of cost, and also to furnish these remedies to municipalities in the state which are not already provided with a similar laboratory. These new departments are intended to supply to all the health officers throughout the state the same facilities for investigation, diagnosis and treatment of infectious diseases now afforded by the city of New York.

Mortality of New York.—According to the state health department's report for July, New York City reported 1155 deaths from insolation and in the entire state 1283 deaths were ascribed to the effects of heat. There were 8 deaths reported from lightning stroke, and 111 deaths occurred from drowning, altogether making over 2000 deaths attributed to accidents and violence, much beyond any former record. The rural death rate was 13 per 1000 population, the urban being 23, while that of the entire state was about 20. There were 400 deaths from pneumonia out of 602 from all acute respiratory diseases, and of 400 deaths from diseases of the urinary system, outside of New York City, 240 were from Bright's disease. Smallpox is reported as causing 89 deaths, a number in excess of that of any heretofore recorded, 74 having occurred in June; of these, 80 occurred in New York City, where about 250 new cases developed during July, the last four weeks showing a decrease.

Buffalo.

Census Statistics.—In New York City there are 638,045 foreign-born males and 632,035 foreign-born females. In the entire city there are 33,587 colored males, of which 27,132 are negroes, and 33,717 females, of whom 33,534 are negroes. The same locality presents in return native males 1,067,660, and native females 1,099,402. The exact enumeration in the case of the four boroughs of New York City is given without materially disturbing the ratio of the percentages, barring the colored element.

OHIO.

Medical Colleges Open.—Ohio Medical University, Columbus, opened September 11, with 197 new students registered and more than 400 present at the opening exercises.—Starling Medical College opened the same day with an initial registration exceeding one hundred.

Personal.—Dr. Kate M. Johnson has opened an office in Wooster.—Dr. E. B. Davis has located in Covington.—Dr. Johnson S. Hunter, Piketon, has moved to Jackson.—Dr. Luther Schofield has moved from White House to Maumee.—Dr. David H. Biddle has moved from Haydenville to Athens.—Dr. O. S. Wood, Pomeroy, has located in Haydenville.

Grand Army Medical Arrangements.—The medical committee for Grand Army week at Cleveland was made up of two corps of physicians; the first a consultant body and the second an active medical corps of relief. Dr. George C. Ashmun was chairman of the committee. The consulting body was composed of 24 physicians, some of whom were constantly on duty at headquarters. The medical corps of relief was made up of 32 physicians who answered telephone calls from all parts of the city. The committee provided 19 ambulances, which were stationed at intervals along the line of march.

PENNSYLVANIA.

Typhoid fever is reported to be epidemic at Bolivar.

Anthrax is raging among cattle on Loyalsock Creek, and two persons at Laporte have been infected.

A physician of Bismarck has been arrested by order of the president of the Cornwall Township school board, charged with having neglected to report a case of smallpox.

Personal.—Dr. James Mitchell has returned from his service with the army in the Philippines and will open an office in Lancaster.—Dr. W. S. Bertelot has located for practice in Reading.

A patent medicine vender of Washington, D. C., who was tried at Chambersburg for practicing and prescribing medicine without a license, was acquitted on the technicality that she had not opened an office.

Dr. Miller Honored.—Philadelphia professional friends of Dr. John S. Miller, Denver, Col., who was formerly one of the demonstrators of anatomy in the Jefferson Medical College and surgeon to St. Joseph's Hospital, Philadelphia, tendered him a dinner, September 10. Professor Francis X. Dercum, of Jefferson Medical College, presided and acted as toastmaster.

Medico-Chirurgical Hospital Improvements.—At a cost of $70,000 extensive improvements have been begun to the Medico-Chirurgical Hospital, Philadelphia, which will be completed in October. The infirmary will be moved into the new building at Seventeenth and Cherry streets, which is now practically finished. The old dental laboratories will also be moved from the rear of the hospital into the new building, and will be made into a dormitory for nurses. The old laundry adjoining the accident room will be discontinued, and this, together with the present dispensary, will be made into a new receiving ward for the treatment of emergency cases. Two new refrigerating plants are to be installed.

MARYLAND.

Dr. J. Walter Sims, Cooksville, has been indicted for not reporting to the State Board of Health the existence of smallpox in his neighborhood.

Typhoid fever is epidemic in Cumberland County. The local board of health attributes the spread of the disease to flies and has informed residents that they must make war on the flies, which, it believes, carries the disease from house to house.

Personal.—Dr. Albert K. Hadel, Baltimore, is at Cape May.——Dr. William Oakley Haines, Baltimore, has gone to Canada.——Dr. Thomas Sudler, Baltimore, former city councilman, has been presented with a handsome silver service.——Dr. Sewell S. Hepburn, Jr., West River, has moved to Annapolis.

Nurses for the Insane.—The recommendation of Dr. J. Clement Clark, superintendent, that a training school for nurses be established at Springfield State Hospital for the insane, was adopted at the last meeting of the Board of Directors. There are 20 male and 16 female nurses who will be instructed on the treatment and care of the insane by the medical staff and supervisors. The course will be a two years' one, and a certificate and increase of salary is to be given to the graduates. There were in the hospital, August 31, 328 patients, 231 male and 97 female.

Site for Isolation Hospital.—Health Commissioner Bosley has been authorized to secure an option on ten acres of land on the Reisterstown road near Pimlico and West Arlington, as the site for the Municipal Hospital for infectious diseases. Dr. Bosley's idea is to erect several different buildings on the property, thus keeping the patients suffering from one infectious disease separated as much as possible from those with others. To do this it is estimated the commission will need considerable more money than the $25,000 which has been provided, and an additional appropriation will be included for this purpose in the ordinance of estimates for the year 1902.

CANADA.

Physician Arrested.—A Toronto doctor was arrested on the 13th, charged with procuring an abortion.

Huron Medical Association.—The regular quarterly meeting of this Association was held at Clinton, Ontario, on September 6. Dr. William Graham, presided, and Dr. J. W. Shaw acted as secretary.

College of Physicians and Surgeons, Quebec.—Sixteen physicians will represent the District of Montreal on this Board for the ensuing year, thirteen the District of Quebec, three the District of Three Rivers, and three the District of St. Francis.

Personal.—Dr. Laberge, medical health officer of Montreal, has started for Germany.——Dr. W. H. P. Hill, who has just completed his term as house surgeon at the Montreal General Hospital, has gone to Europe prior to entering upon practice in Montreal.

Montreal General Hospital.—The medical staff of the Montreal General Hospital for the ensuing year will be made up as follows: Dr. von Eberts, medical superintendent, and Drs. Turner, Secord, Robertson, Campbell, Howard, Bruce, Brown, Rogers and Ker as house surgeons.

Dr. **Montizambert,** director of public health, has handed in his report to the Minister of Agriculture on the recent Tuberculosis Convention at London. It is understood that the report combats Professor Koch's theory that bovine tuberculosis is not transmissible to human beings.

Dowieites Arrested.—A special dispatch from Victoria, B. C., dated the 12th inst., states that an elder of the Dowieite persuasion and one of his disciples have been arrested on a charge of manslaughter for refusing to provide proper medical assistance for the infant child of the latter.

Bacteria in Cheese.—On account of frequent complaints as to certain cheese being "off" flavor, Professor Harrison, bacteriologist of the Ontario Agricultural College, was ordered by the government to investigate, and he has found a species of bacteria which he thinks is responsible for the trouble.

Toronto Druggists to Meet.—There is to be held on the 19th inst., a general meeting of the retail druggists of Toronto for the purpose of considering relations with the proprietary trade. It is understood that a number of the druggists of the city are in favor of cutting adrift from patent medicines.

Collapsed in the Witness Box.—Two years ago Dr. J. H. Morrison, an oculist of St. John, N. B., was injured in a street railway accident in that city. He sued the company for $60,000, and after various delays the suit came up for trial during the past week. While under examination the doctor collapsed from nervous strain and is now said to be at the point of death. Dr. Morrison was for many years inspector of schools in Manitoba.

Doctor Appeals to the Courts.—Dr. H. C. Dumont, who has been denied a license to practice in the Province of Quebec, has been granted a petition for a writ of mandamus by Mr. Justice Langelier against the College of Physicians and Surgeons of that province. The writ of mandamus orders the College to issue the license. Five or six cases of a similar nature were decided in Quebec last year in a similar manner. The College will take the case through the Court of Appeal, and, if necessary, to higher courts.

St. Francis Medical Association.—This Association held its regular meeting on Thursday, the 13th inst. Dr. McCabe, of Windsor Mills, was recommended to the position of joint coroner of the district in succession to the late Dr. McMorrine. Dr. P. Pelletier reported that it was the intention of the Quebec Provincial Board of Health to take steps to instruct the people in hygiene, and that a convention would be held shortly at Sherbrooke in this connection. He asked the support of the Association for this movement. The following officers were elected for the ensuing year; President, Dr. J F. Rioux, Sherbrooke; first vice-president, Dr. W. D. Smith, Sherbrooke; second vice-president, Dr. McCabe, Windsor Mills; honorary secretary, Dr. Russell Thomas, Lennoxville.

War on the Ontario Medical Council.—A meeting of the executive committee of the Medical Defense Association, which it will be understood has nothing to do with defending practitioners from suits for alleged malpractice, and is no part nor parcel of the organization recently perfected at the Canadian Medical Association meeting—the Physicians' Protective Association—was held recently in Toronto, when a sub-committee of publication was appointed to supervise the issuing of a short series of letters to the public press setting before the profession, the public and the legislature of the province the disabilities under which the medical profession in Ontario is supposed by the members of this Association to be resting. Dr J. H. Sangster, of Port Perry, has undertaken to do this work at the urgent and unanimous wish of his executive committee; and for the next month or two the officials of the Medical Council will be kept busy reading what Dr. Sangster thinks of that august body.

British Columbia Medical Association.—The second annual meeting of this Association was held at Victoria on the 5th and 6th inst. and there was a good representation of the profession from the province. Several eastern physicians came on from the meeting of the Canadian Medical Association at Winnipeg. On the forenoon of the first day the delegates were taken by special steamer to the William Head quarantine station, which was inspected. In the afternoon, Dr. John Dune, the president, delivered the annual presidential address reviewing the history of medicine from his student days. Dr. R. E. McKechnie, of Nanaimo, read a paper on midwifery, which provoked an interesting discussion. On the afternoon of the 6th the visitors were taken to D'Arcy Island, where the lepers were inspected. In the forenoon, Dr. Fagan read a paper on tuberculosis, and in the evening a banquet was held at the Driad. The following officers were elected for the ensuing year: President, Dr. Walker, New Westminster; vice-president, Dr. Helmcken; secretary, Dr. Pearson, Vancouver.

Deaths and Obituaries.

John Eliot Woodbridge, M.D., Charity Hospital Medical College, Cleveland, Ohio, 1866, a member and former trustee of the American Medical Association, died at Bad Nauheim, Germany, from heart disease, August 31, aged about 55. After graduation he practiced for a time in Kentucky and as an acting assistant surgeon in the army. In 1870 he settled in Youngstown, Ohio, where he speedily gained a large practice. It was in 1884 that he first began to experiment with the treatment for typhoid fever, which has since been known by his name, and for a time attained a measure of popularity with the profession. At the outbreak of the Spanish-American war he entered the Volunteer army as major and surgeon and was placed in charge of the hospital at Fort Meyer. A year ago, to regain his health he went abroad, spent the winter in Egypt and then went to Bad Nauheim, where he died.

Gustav Schiff, M.D., University of Würzburg, Germany, 1856, who had practiced in Chicago, Nashville, Dallas and San Francisco; served throughout the Civil war, and labored heroically during the Tennessee cholera epidemics of 1866 and 1873, died at his home in San Francisco, September 2, from Bright's disease, aged 68.

John M. Meyer, M.D., Transylvania University, Lexington, Ky., 1843, the oldest practicing physician in Kentucky, and a member of the American Medical Association, who had been in declining health for some time, died at his home in Danville, September 5, aged 84.

Philip Schaffner Baker, M.D., Medical College of Indiana, Indianapolis, 1879, professor of chemistry in De Pauw University, Greencastle, Ind., and known throughout the country as an educator, died at Asheville, N. C., September 2, from tuberculosis, aged 50.

Conrad R. Ohlinger, M.D., Ohio Wesleyan University, Cleveland, 1898, of Cleveland, acting assistant surgeon, U. S. Army, was drowned while returning from a scouting expedition in the Pambugan Mountains, Samar, Philippine Islands, August 20.

Sidney Rogers Burnap, M.D., College of Physicians and Surgeons, New York, 1862, a prominent physician of Windsor Locks, Conn., died at his home in that place, September 3, from brain tumor, after an illness of several months, aged 68.

Edmund P. Duval, M.D., University of Pennsylvania, Philadelphia, 1847, a practitioner for 33 years in Maryland, and from 1880 to 1892 state librarian of Maryland, died at his home in Annapolis, September 5, aged 75.

Alonzo D. McComb, M.D., Western Reserve University, Cleveland, Ohio, 1880, for twenty years a practitioner of medicine in Hawthorne, Pa., died at his home in that place, September 5, from Bright's disease, aged 47.

Etienne Gosselin, M.D., Laval University, Quebec, 1883, a prominent physician of Quebec, died at his home in that city, September 6, from typhoid fever, after an illness of three weeks, aged 46.

Louis Warfield Ritchie, M.D., University of Georgetown, Washington, D. C., 1863, a veteran of the Civil war, died at his home in Washington, September 9, from Bright's disease, aged 58.

Charles F. Atwood, M.D., Bellevue Hospital Medical College, New York, 1879, died at his residence in Winterport, Maine, September 6, after an illness of two weeks, aged 45.

William Washington Rigby, M.D., Baltimore Medical College, 1892, died at his home in Spartanburg, S. C., from typhoid fever, after a long illness, September 4, aged 30.

Charles De Saussure Clarkson, M.D., Medical College of the State of South Carolina, 1890, died suddenly from apoplexy, at his home in Allendale, S. C., September 3, aged 35.

George Lewis Staley, Jr., M.D., College of Physicians and Surgeons, Baltimore, 1878, died at his home in Baltimore, September 9, after an illness of six weeks, aged 44.

Dennis B. Dorsey, M.D., College of Physicians and Surgeons, Keokuk, Iowa, 1891, died at his home in Braymer, Mo., September 2, after a prolonged illness, aged 71.

John R. Williams, M.D., Vanderbilt University, Nashville, Tenn., 1892, died at his home in Port Royal, Tenn., from typhoid fever, September 3, aged 33.

Samuel R. Owens, M.D., University of Tennessee, Nashville, 1886, died at his home near Somerset, Ky., August 29, aged 76.

Charles W. Adkins, M.D., University of Louisville, Ky., 1858, died at his home in Langston, Ala., September 4, aged 60.

J. M. Winn, M.D., died at his home in Forest City, Ill., September 5, aged 71.

Book Notices.

A PRACTICAL TREATISE ON MEDICAL DIAGNOSIS FOR STUDENTS AND PHYSICIANS. By John H. Musser, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Fourth Edition, Revised and Enlarged. Illustrated with 250 Woodcuts and 49 Colored Plates. Cloth. Pp. 1105. Price, $6.00. Philadelphia and New York: Lea Brothers & Co. 1900.

This excellent volume is well supplied with artistic and, for the most part, original illustrations, and the text is clear and concise. In this edition the author has introduced the latest acquisitions of medical research. His desire to make use, as much as possible, of methods of scientific precision, has placed the work facile princeps of its class. The treatise should find its way into the library of every practitioner and student, if it is not there already.

THE TREATMENT OF FRACTURES. By Charles Locke Scudder, M.D., Surgeon to the Massachusetts General Hospital, Out-Patient Department. Assisted by Frederick J. Cotton, M.D. Second Edition, Revised. With 611 Illustrations. Cloth. Pp. 457. Price, $4.50 net. Philadelphia and London: W. B. Saunders & Co. 1901.

That a second edition of this work should be necessary in less than a year speaks well for the manner in which the first edition was received by the profession. As the first edition was so recently reviewed in these columns, it will be necessary to mention here only the changes and additions which appear in this, the second edition. One of the most important changes is the introduction of a number of additional *x*-ray plates. The value of the *x*-ray plate in the diagnosis of many fractures can not be overestimated. The value, therefore, of the introduction of good *x*-ray plates of the various fractures in a work of this kind is very apparent. A series of clinical cases has also been introduced, which makes a fitting supplement to the chapter on skull fractures. The use of plaster-of-paris dressings in the treatment of fractures is particularly emphasized, and numerous excellent plates have been introduced illustrating the various methods of their application. The same excellent style has been maintained in the work, and the publisher's part equally well done.

Association News.

New Members.

The following is a list of new members of the American Medical Association for the month of August:

ALABAMA.
Westmoreland, H. D., Huntsville.

ARKANSAS.
MacCammon, Vernon, Arkansas City.
Graham, J. F., Hot Springs.

CALIFORNIA.
Cagliera, G. E., San Francisco.

CONNECTICUT.
Lynch, Robt. J., Bridgeport.

FLORIDA.
Bize, L. A., Tampa.

ILLINOIS.
Kilbourne, E. D., Chicago.
Sharpe, Anne McFarland, Jacksonville.
Stees, Marie J., Freeport.
Chapin, C. E., Bloomington.
Lucas, F. B., Peoria.
Hopkins, S. W., Walnut.
Heywood, C. W., Riverside.
Becker, E. C., Chicago.
Swan, C. F., Chicago.
Burdick, A. B., Chicago.
Melton, W. A., Jr., Warrensburg.

IOWA.
Beach, M. A., Carroll.
Stiles, F. N., Davenport.
Hoxie, W. E., Hampton.
Pollock, W. L., Boone.
Stalford, G. A., Latimer.
Russell, C. R., Ottumwa.
Smith, E. J., Harlan.
Cantwell, J. D., Davenport.

INDIANA.
Wolferman, A. Gertrude, Indianapolis.
Keller, F. G., Alexandria.

KANSAS.
Wever, J. S., Leavenworth.
Berry, J. A., Topeka.

KENTUCKY.
Wash, Bishop, Cornishville.
Bates, S. W., Sheperdsville.
Rodgers, J. F., Bowling Green.
Cain, C. E., Mt. Victory.

LOUISIANA.
McBride, R. E., Houma.
Ballowe, H. L., Diamond.

MASSACHUSETTS.
Packard, G. H., Medford.
Anderson, R. H., Fall River.

MICHIGAN.
Kay, W. J., Attica.

MINNESOTA.
Lynch, J. L., Winona.
Egge, T. S., Moorhead.
Bagley, W. R., Duluth.

MISSOURI.
Paris, R. W., Lawrenceburg.
Gaines, J. J., Liberty.
Thorpe, J. L., Jefferson City.
McHenry, D. D., Princeton.

NEBRASKA.
Hepperlen, H. M., Beatrice.

NEW HAMPSHIRE.
Robb, W. M., Marlow.

NEW YORK.
Merenna, Giovanni, Brooklyn.
Marsh, J. P., Troy.
Rood, Edgar, Westfield.
Tieste, L. E., Brooklyn.
Distler, L. G., Westtown.
Preston, A. W., Middletown.
Pomercy, S. G., W. Oneonta.
Burkelman, A., New York City.
Preston, J. L., Kingston.
McGuire, F. W., Buffalo.

OHIO.
Haefele, G. L., Peninsula.

PENNSYLVANIA.
Ford, F. A., Altoona.
Berry, E. S., Shippensburg.

SOUTH DAKOTA.
Wood, T. J., Huron.

TENNESSEE.
Todd, J. D., Trerevant.

TEXAS.
Parker, W. S., Calvert.
Atkins, W. E., Pilot Point.
Norsworthy, O. L., Houston.
Chapman, H. J., San Antonio.
Barr, H. A., Beaumont.

UTAH.
Noyes, J. F., Am. Fork.

VIRGINIA.
Strickland, J. T., Roanoke.

WASHINGTON.
MacLeod, A. F., Spokane.

WISCONSIN.
Wayman, Sarah M., Baraboo.
Klemm, L. F., Milwaukee.
Mason, C. H., West Superior.
Coon, J. W., Milwaukee.
Marshall, A. P., Viroqua.

Miscellany.

Medical Corps of the U. S. Army. Information for Candidates Seeking Appointment.

The Medical Corps of the Army, as increased from a total of 192 to 321 medical officers by recent Congressional action, consists of a Surgeon General with the rank of brigadier general, eight Assistant Surgeons General with the rank of colonel, twelve Deputy Surgeons General with the rank of lieutenant colonel, sixty Surgeons with the rank of major, and two hundred and forty Assistant Surgeons with the rank of first lieutenant, mounted, for the first five years, and the rank of captain, mounted, thereafter, until promoted to major. Section 1172, Revised Statutes of the United States, provides that "No person shall receive the appointment of Assistant Surgeon unless he shall have been examined and approved by an Army Medical Board, consisting of three Surgeons or Assistant Surgeons, designated by the Secretary of War; and no person shall receive the appointment of Surgeon unless he shall have served at least five years as an Assistant Surgeon in the Regular Army, and shall have been examined and approved by an Army Medical Board, consisting of not less than three Surgeons, designated as aforesaid." The act to increase the efficiency of the military establishment of the United States, recently approved, further provides "That the period during which any Assistant Surgeon shall have served as a Surgeon or Assistant Surgeon in the Volunteer Army during the war with Spain or since shall be counted as a portion of the five years' service required to entitle him to the rank of captain. All vacancies are filled by appointment to the junior grade (first lieutenant). Promotion through the intermediate grades of rank from that of captain to that of colonel is by seniority, but there is an examination for the rank of captain and another for that of major, to ascertain the fitness of the officer for promotion. Advancement to lieutenant colonel and colonel takes place without further examination. The Surgeon General is selected by the President from among the members of the corps.

Pay and Emoluments.—To each rank is attached a fixed annual salary, which is received in monthly payments, and this is increased by 10 per cent. for each period of five years' service until a maximum of 40 per cent. is reached. An Assistant Surgeon with the rank of first lieutenant, mounted, receives $1600 per annum, or $133.33 monthly. At the end of five years he is promoted to captain and receives $2000 a year, which, with the increase of 10 per cent. for five years' service, is $2200, or $183.33 per month. After ten years' service as captain the pay would be $2400 annually, or $200 per month. The pay attached to the rank of major is $2500 a year, which, with 10 per cent. added for each five years' service, becomes $3000 after 10 years' service, $3250 after fifteen years and $3500 after twenty years. The monthly pay of lieutenant colonel, colonel, and brigadier general is $333.33, $375, and $458.33 respectively. Officers in addition to their pay proper are furnished with a liberal allowance of quarters according to rank, either in kind, or, where no suitable Government building is available, by commutation. When traveling on duty an officer receives mileage for the distanee traveled; the amount allowed is sufficient to cover all expenses of journey. On change of station he is entitled to transportation for professional books and papers and a reasonable amount of baggage at Government expense. Mounted officers, including all officers of the Medical Corps, are provided with forage, stabling, and transportation for horses owned and actually kept by them, not exceeding two for all ranks below a brigadier. Groceries and other articles may be purchased from the Commissary and fuel from the Quartermaster's Department at about wholesale cost price. Instruments and appliances are supplied in abundance for the use of medical officers in the performance of their duties. Well selected professional libraries are supplied to each hospital and standard modern publications on medical and surgical subjects are added from time to time; current issues of a number of representative medical journals are also furnished for use of medical officers.

Army Medical School.—In 1893 the Secretary of War authorized the establishment of an Army Medical School in the city of Washington for the purpose of instructing medical officers who have been appointed since the last preceding term of the school, and such others as may be authorized to attend.

The course of instruction is for five months, and will be given annually, when practicable, at the Army Medical Museum, in Washington City, commencing in November. Five professors are selected from among the senior medical officers of the Army, stationed in or near the city of Washington, also an instructor in first aid and ambulance drill. . . .

Duties and Privileges.—Leave of absence on full pay is allowed at the rate of one month per year, and this when not taken may accumulate to a maximum of four months, which at the end of four years is then available as one continuous leave. Beyond this an officer may still be absent with permission on half pay. Absence from duty on account of sickness involves no loss of pay.

Medical officers are entitled to the privilege of retirement at any time for disability incurred in the line of duty, or after forty years' service. On attaining the age of sixty-four they are placed upon the retired list by virtue of law. Retired officers receive three-fourths the amount of their pay proper at the time of retirement.

When medical officers with the rank of captain approach the period of their examination for promotion to a majority they are usually assigned to duty as attending surgeons in the principal medical centers of the United States, to enable them to become familiar with the practice of the leading physicians and surgeons in this country, and to attend medical lectures, meetings of medical societies, etc. These assignments are made for one year only, in order that as many medical officers as possible may be enabled to avail themselves of the advantages thereby afforded. At the end of this tour of duty they are required to make a detailed report to the Surgeon General showing how much of their time has been occupied by their official duties and to what extent they have availed themselves of the advantages offered for professional advancement. . . .

Examination.—Permission to appear before the Board is obtained by letter to the Secretary of War, which must be in the handwriting of the applicant, giving the date and place of his birth and the place and State of which he is a permanent resident, and inclosing certificates, based on personal acquaintance, from at least two reputable persons as to his citizenship, character, and habits. The candidate must be a citizen of the United States, between twenty-two and twenty-nine years of age, in the case of a candidate applying for appointment from civil life, and between twenty-two and thirty-four years of age in the case of a candidate who has served honorably in the Army of the United States, either as a commissioned medical officer of volunteers or as an Acting Assistant Surgeon during the war with Spain or since. He must be of sound health and good character, and a graduate of some regular medical college, in evidence of which his diploma will be submitted to the Board. The scope of the examination includes the morals, habits, physical and mental qualifications of a candidate, and his general aptitude for service; and the Board will report unfavorably should it have a reasonable doubt of his efficiency in any of these particulars. The physical examination comes first in order, and must be thorough. Candidates who fall below sixty-four inches in height will be rejected. Each candidate is also required to certify "that he labors under no mental or physical infirmity or disability which can interfere with the efficient discharge of any duty which may be required." Errors of refraction, when not excessive, and not accompanied by ocular disease, and when correctible by appropriate glasses, are not causes for rejection. The professional examinations are conducted by both written and oral questions, upon anatomy, physiology, chemistry, hygiene, pathology and bacteriology, therapeutics and materia medica, surgery, practice of medicine, obstetrics and the diseases of women and children. Examinations are also con-

ducted at the bedside in clinical medicine and surgery, and operations and demonstrations are required to be made by the candidate upon the cadaver. Hospital training and practical experience in the practice of medicine, surgery, and obstetrics are essential to candidates seeking admission to the Medical Corps of the Army, who will be expected to present evidence that they have had at least one year's hospital experience, or the equivalent of this in practice. Candidates presenting a degree in arts, sciences (other than medicine) or literature, those who hold first-class teachers' certificates or who submit evidence of graduation from a reputable high school or similar institution (approved by the Board), will not usually be examined in other than the professional subjects enumerated above. Should a candidate, during his professional examination by the Board, present evidence of a deficiency in his general education in elementary subjects, he may be required to undergo an oral examination in arithmetic, history, geography, literature, and physics, and such examination, if unsatisfactory, will be cause for his rejection. Candidates claiming especial knowledge of the higher mathematics, ancient or modern languages, drawing, analytical chemistry, or branches of natural science, will be examined in those subjects as accomplishments and will receive due credit therefor according to their proficiency. To save unnecessary expense to a candidate desiring a preliminary physical examination, written authority may be given by this office for him to present himself at the nearest military post, garrison, or recruiting station for such examination. Any opinion given as to the result of such preliminary examination must, however, be considered as purely advisory and not as determining the subsequent action of an Army Medical Board in the case.—Circular of the Medical Department.

Intellectual Precocity Among Physicians.—The *Semaine Médicale*, in a recent review of this subject, has been able to collect only five instances of unusual intellectual precocity among physicians. One of these, Goethe, never completed the medical course. Cardan was an Italian physician in the sixteenth century who graduated and commenced teaching at 22. Boerhaave, the great Dutch physician, 1668-1738, was proficient in Greek and Latin when he was 11, but did not commence his medical studies until the age of 22. His famous pupil, A. von Heller, received his medical degree at 19. At 10 the latter composed a Hebrew and a Chaldean grammar for his own use, and at 15 had written several comedies, tragedies and an epic of 4000 verses. In our own day Flourens, best known for his physiologic researches, received his medical degree at 19. Oliver Wendell Holmes, while yet in his 'teens, wrote the poem "Old Ironsides," which prevented the breaking up of that historical vessel.

Societies.

Medical Society of the State of Pennsylvania, Philadelphia, Sept. 24-26, 1901.
American Electro-Therapeutic Association, Buffalo, Sept. 24-26, 1901.
Oregon State Medical Society, Portland, Sept. 25-27, 1901.
Utah State Medical Society, Provo City, Oct. 1-2, 1901.
Idaho State Medical Society, Pocatello, Oct. 3-4, 1901.
Tri-State Medical Society of Alabama, Georgia and Tennessee, Nashville, Tenn., Oct. 8-10, 1901.
Wyoming State Medical Society, Evanston, Oct. 8-9, 1901.
Vermont State Medical Society, Montpelier, Oct. 10-11, 1901.
New York State Medical Association, New York City, Oct. 21-24, 1901.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Twenty-seventh Annual Meeting, held at Put-in-Bay Island, Ohio, September 12-14, 1901.

Election of Officers.

The following officers were elected for the ensuing year: President, Dr. S. P. Collins, Hot Springs, Ark.; first vice-president, Dr. J. C. Culbertson, Cincinnati, Ohio; second vice-president, Dr. Paul Paquin, Asheville, N. C.; secretary, Dr. Henry E. Tuley, Louisville, Ky.; and treasurer, Dr. Thomas H. Stucky, Louisville, Ky.

Death of President McKinley.

The following resolutions were offered:

"Our President is dead. Our President, who accomplished the unification of our country; the abolition of sectional lines; the expansion which made us a world power, his last public utterance being in favor of peace, international reciprocity and sympathy, has been removed by the enemies of Society.

"We are overwhelmed with sorrow and personal grief for the death of the greatest of the world's rulers; for one who, from the standpoint of statesmanship, political foresight, sympathy with all the people, morality, the sweetest features of personal character and home-life, appealed to the appreciation of and affections of every citizen.

"A professional sorrow and disappointment taking the place of a hope that had inspired us from the first day the nation's calamity overwhelmed us.

"Joining in the personal grief and bereavement from which every true and loyal American citizen is this day suffering, we, the members of the Mississippi Valley Medical Association, in our twenty-seventh annual meeting assembled, do postpone the further presentation and consideration of special papers, in token of the love and respect with which we shall ever cherish the memory of our martyred President, William McKinley.

"(Signed.) ANDRUS TIMBERMAN, M.D.
H. O. WALKER, M.D.,
I. N. LOVE, M.D.
Committee."

On account of the death of President McKinley, a motion was made and unanimously adopted by a rising vote, that the papers listed for the third day be read by title, referred to the Committee on Publication, and that the Association adjourn out of respect to the distinguished dead.

(To be continued.)

CALIFORNIA ACADEMY OF MEDICINE.

Regular Meeting held Aug. 27, 1901.

Dr. D. W. Montgomery, in the chair.

X-Ray Dermatitis.

DR. T. W. HUNTINGTON presented a man 35 years of age, who during last October was subjected to the *x*-rays several times, the result being an extensive dermatitis over the right rectus muscle above the umbilicus, over an area the size of a saucer. The case was presented to the Academy by Dr. Montgomery at the April meeting. At that time there was an elliptical area of skin necrosis, whose dimensions were three and a half by two and a half inches. It presented a dull mottle appearance. It was slightly moist, sluggish and parchment-like to the touch. Surrounding the ulcer there was a hyperemic zone, which faded gradually at its outer margin. The patient complained of intense itching, which at times was unbearable. At the junction of the necrotic and hyperemic areas there was marked hyperesthesia and over the entire surface the pain was a constant factor. Through the courtesy of Dr. Montgomery the case came under the Doctor's care, May 9, 1901, and the following day entered the hospital. For two days strong antiseptic lotions were applied as a preliminary to operation.

On May 12, under chloroform anesthesia, the ulcer was circumscribed by a deep incision, extending through a thick layer of fat to the sheath of the right rectus. In dividing the layer of fat it offered so much resistance to the knife as to suggest an abnormal condition of that tissue. Accordingly the margin fat was also removed for a considerable distance from the periphery of the original incision, the overlying skin being left as a loose flap. This flap was then carefully sutured to the sheath of the rectus, and to secure a better lodgment for the grafts, the exposed sheath was removed up to the suture line. Upon the belly of the rectus, skin grafts, after the method of Thiersch, were adjusted and the wound was dressed with silver foil and dry aseptic gauze.

The patient made a quick, uninterrupted recovery, leaving the hospital. The recovery seems to have been permanent and he makes no complaint save of hypersensitiveness of a small area below the lower segment of the cicatrix. At this joint the skin is slightly reddened but there seems no tendency to necrosis, although the patient has been roughing it in the mountains for several weeks. The only feature of the case worthy of further comment is a keloidal ring encircling the grafted area following the line of cultures.

DR. DUDLEY TAIT said that there is a little point in the Thiersch graft that is of interest and that is the advisability of overlapping the grafts. He finds when the graft is not overlapped we get an area of granulation. If we overlap, a certain amount of skin disappears but there is a perfect line between the graft and the skin, and we do not get the cicatricial tissue that always accompanies the granulation tissue.

DR. J. HENRY BARBAT said that with the *x*-ray there is no need to burn except where one treats with the *x*-ray and then you may get a burn. Even in that case there is no need to burn unless you want to. He has burnt a patient slightly on purpose to get the slight inflammatory action without severe burning, but there is no necessity now in taking a skiagraph and burning the skin.

DR. D. W. MONTGOMERY said that the patient came to him some time before Dr. Huntington saw it. He was then suffering excruciating pain. It was not only tender but spontaneously painful. Simple ointments such as balsam of Peru and red oxid of mercury ointment were tried with temporary benefit and then there would be a relapse. The best dressing was a 3 or 4 per cent. solution of lysol. This gave ease and comfort for some time and it looked as if the wound was going to heal, but then it became worse again. He showed it to the society and Dr. Huntington said he thought he had a plan for such a wound. The interesting part to me is that the Doctor went in under the skin and the skin was stitched to the aponeurosis of the muscle. All of the fat and a part of the aponeurosis were removed. It is very interesting to me to know that he went in, in a flaring direction, but I suppose that is the direction of the rays. The result is excellent.

Medication into the Epidural Space.

DR. DUDLEY TAIT read a short paper describing the anatomy and technic of puncture; he referred to the experimental work done by Cathelin, Laborde and himself. The epidural route was first described and proposed by Cathelin, an assistant of Guyon, shortly after surgeons had pointed out numerous dangers following the injection of cocain by the subarachnoid route. Sicard was the first to show its use in medical therapeutics. Up to the present time, this method has been used principally to check pain, as in sciatica, lumbago, herpes zoster, fulgurant pains, intercostal neuralgia, gastric and vesical crisis. In the domain of surgery epidural injections of cocain have not as yet given sufficient analgesia for operative work. Chipault alone has been able to perform several operations on the lower limbs by this method. The essayist tried it unsuccessfully in circumcision. Prolonged and pronounced relief has been obtained in inoperable cases of cancer of the rectum, in painful accouchements, cystitis, tuberculosis and dry arthritis. In four cases of incontinence of urine due to various causes, Albarran and Cathelin report almost complete cessation of the incontinence after two or three epidural injections of cocain. The quantity of cocain used by this route is from 3 to 4 centigrams in a solution of 1 to 200. Manclaire recently made a series of epidural injections of iodoform emulsion in Potts' disease. His results have not yet been published. Huchard has used this route to administer various cardiac stimulants. Cathelin believes that this route may be used for the majority of soluble drugs; he strongly urges injections of cyanid or benzoate of mercury in malignant or cerebrospinal syphilis. Compared with the subarachnoid route the epidural method possesses many advantages from the medical point of view and up to the present time it has been spoken of favorably by the eminent physiologists who condemned in the strongest terms Corning's subarachnoid method.

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment will be answered in these columns.]

Treatment of Hyperchlorhydria.

Einhorn, as stated by *Phil. Med. Jour.*, recommends cold sponge baths in the morning for ten minutes before breakfast and light exercise during the day. The diet should be of that character which will most intensely excite the glands to action. Acids and spirits must be avoided and the food should be rich in albumin, and the starchy foods excluded. Three large and two small meals should be taken daily. Alkalies are indicated in the way of medication. From one-half to one dram of the sodium bicarbonate should be given three times a day about one hour after meals, with the addition of magnesia and rhubarb when there is constipation. When the nervous element is pronounced the following is recommended by Einhorn:

R.	Strontii bromidi	℥iii	12
	Aq. menthæ pip. q. s. ad	℥ii	64

M. Sig.: One teaspoonful three times a day at meal time.

Palliative Treatment of Cancer of the Larynx.

A. Courtade, in *Laryngoscope*, gives this treatment in cancer of the larynx: The introduction of a suitable canula to produce easy respiration; check the hemorrhage by the use of perchlorid of iron or peroxid of hydrogen; diminish the quantity of secretion and the odor by instillation of mentholated oil, such as eucalyptus; prevent granulations by swabbing with pyoktannin.

Treatment of Chalazion.

The following combination has been used with success in the treatment of Meibomian cyst:

R.	Iodi puri	gr. iii	18
	Potassii iodidi	gr. vi	36
	Lanolini	ʒi	4
	Petrolati liquidi	ʒiiss	80

M. Sig.: To be applied locally at night.

Treatment of Secondary Anemia.

Blackwood recommends the following combinations of iron and arsenic in the treatment of anemia:

R.	Euquininæ	ʒi	4
	Ferri lactatis	ʒii	8
	Liq. acidi arsenosi	ʒiss	6
	Tinct. lavend. comp.	ʒss	16
	Elix. aurantii	ʒiv	128

M. Sig.: One teaspoonful four times a day in water.

Burns of the First Degree.

The following is recommended as a local application in burns before vesication has taken place:

R.	Acidi acetici dil	ʒi	32
	Glycerini	ʒi	32

Bismuthi subnit. q. s. to make paste.

M. Sig.: Apply to the affected parts.

Comparative Value of the Seed and Root of Colchicum.

It is well known that the value of the preparation of colchicum depends upon how it is prepared and from what prepared. Many preparations of this drug produce no results because of substitution of an inferior grade of the drug. The same may be said of strophanthus, gaultheria and digitalis.

These preparations, depending as they do upon their active principles for their efficiency in therapeutic use, should be selected with care and that part of plant made use of which contains the largest per cent. of the active ingredient.

Dr. L. Schulze, in *Western Druggist*, in speaking of the comparative value of the seed and root of colchicum, states that the seed contains on an average from .6 per cent. to .7 per cent. of the active principle. The root contains between .4 per cent. and .5 per cent. Consequently, he states, there should

be no valid reason why the root should be retained in the pharmacopeia since the seed contains so much more of the active principle colchicine.

Sulphur in Dysentery.

Dr. G. A. Richmond, as noted in monthly *Cyc. of Med.*, recommends the following combination in the treatment of dysentery:

℞. Sulphuris (sublimed) .....gr. xx 1|33
Pulv. opii et ipecacuanhæ .....gr. v |33

M. Ft. chart. No. i. Sig.: One such powder to be taken every four hours until the diarrhea is checked.

Dr. Richmond states that in all his cases treated by the foregoing method, recovery has been rapid and the patients derived very speedy relief from pain and tenesmus. The blood and mucus were easily checked and relapses never occurred. As soon as the diarrhea becomes less it is desirable to give the powders less frequently.

Habitual Constipation.

℞. Sulphuris loti .....℥i 32|
Potassii bitartratis .....℥i 32|
Pulv. sennæ .....℥iv 16|
Syrupi rhei .....℥ii 8|
Ext. cascaræ sagradæ flu.....℥ii 8|

M. Ft. confectio. Sig.: One teaspoonful at night to move the bowels.

Vomiting of Acute Gastritis.

The following is recommended to suppress the vomiting in acute gastritis:

℞. Vini ipecacuanhæ .....℥iv 16|
Tinct. nucis vom. .....℥ii 8|

M. Sig.: Take ten drops in water every two hours.

Treatment of Fissure of the Nipples.

Dombrovsky, in *Deutsche Aerzte-Zeitung*, recommends that the nipple be bathed several times a day with a 3 to 5 per cent. solution of potassium permanganate. He states that the first few applications are somewhat painful, but the pain soon disappears. Before the infant nurses the breast should be washed with warm water and the breast protected with some waterproof material having a perforation through which the nipple may project. He states that a cure will result in a week.

To Remove Dandruff.

The following combination is recommended to remove the dandruff from the hair:

℞. Resorcin .....℥iss 6|
Glycerini .....℥i 32|
Alcoholis .....℥iss 48|
Aq. rosæ .....℥iii 96|
Aq. destil. q. s. ad .....℥viii 256|

M. Sig.: Apply locally and thoroughly rub into the scalp.

In Insomnia of Hysteria.

℞. Pot. bromidi .....℥iv 16|
Chloralis hydratis .....℥iii 12|
Tinct. asafetidæ .....℥iv 16|
Syr. simplicis .....℥vi 24|
Aq. destil. q. s. ad.....℥vi 192|

M. Sig.: One tablespoonful every three hours until sleep is produced.

Treatment of Acne in the Young.

The following is recommended by Brocq, as noted in *New York Med. Jour.*: The patient should eat of fat and butter sparingly and should abstain from the use of coffee, tea, pork, wine, pastry, cheese and spiced foods. The following preparation is advised to be taken at the beginning of each meal:

℞. Sodii bicarb. .....gr. ivss |27
Magnesiæ (calcined) .....gr. iii |18
Pulv. cascaræ sagradæ .....gr. iiss |15
Benzonaphthol .....gr. iiss |15

M. Ft. cachet No. i. Sig.: One such before each meal.

The face should be cleansed with pledgets of absorbent cotton and water as hot as can be borne, in which is boiled two teaspoonfuls of bran and a soupspoonful of sodium laborate to the quart.

At night the following ointment is to be applied to the spots:

℞. Beta-naphthol (camphorated) ....gr. ivss |27
Resorcin .....gr. iii |18
Saponis nigri .....gr. iii |18
Cretæ preparatæ .....gr. viiss |50
Sulphuris precip. .....gr. xxii 1|50
Vaselini .....gr. iii |18

M. Sig.: Apply locally at night.

In the morning the following should be applied after washing the face:

℞. Sodii boratis .....℥iiss 10|
Etheris sulph. camph. .....℥x 40|
Aq. rosæ .....℥iii 96|
Aq. destil .....℥ivss 144|

M. Sig.: Applied locally.

Mustard in Pneumonia.

In the *Post-Grad.*, Dr. L. Weber highly recommends the use of the mustard bath in the treatment of pneumonia, especially in children. He uses about one pound of mustard to one child's bath-tub of water. The child should remain in the bath ten minutes or until the skin becomes pinkish instead of blue. Friction must be carried on while the patient is in the bath. He should then be removed from the bath and wrapped in blankets. These should be repeated every second or third day.

Treatment of Hemorrhoids and Ulcer of Rectum.

Darche, in *Canad. Pract.*, has used with success the following applications in such cases:

℞. Mercuralis .....gr. v |30
Chloretoni .....gr. xv 1|
Acidi boracici .....℥ss 2|
Petrolati .....℥i 32|

M. Ft. unguentum. Sig.: To be applied three times daily.

In cases of ulcer of the rectum he used the following in the form of a suppository:

℞. Mercurolis .....gr. i |06
Chloretoni .....gr. ii |12
Acidi boracici .....gr. viii |5
Olei theobromæ .....gr. xxx 2|

M. Ft. suppos. No. i. Sig.: To be inserted at bedtime.

In cases of chronic gonorrhea he recommends the following in the form of a bougie:

℞. Mercurol .....1 per cent.
Chloretoni .....2 per cent.
Acidi boracici .....8 per cent.

M. Ft. bougies. Sig.: Insert night and morning.

Medicolegal.

Requiring Examination by Expert Oculist and Aurist.—The Supreme Court of the State of Washington holds, in the personal injury case of Myrberg vs. the Baltimore & Seattle Mining & Reduction Company, that the trial court has the power, within its discretion, to require a submission to an examination by an expert oculist and aurist where damages for alleged injuries to eyesight and hearing are claimed. But it does not think that an application to require a submission to such an examination was seasonably made, or that the trial court abused its discretion in not requiring it, when the application therefor was not made until in the midst of the trial when all the witnesses had been examined in chief on the one side, and several on the other, and it would involve a delay in the trial and loss of time for court and jury.

Attending Physician as Witness in Poisoning Case.—The Supreme Court of Oregon says, in the case of State vs. Simonis, that there is some conflict in the authorities as to whether a medical witness is qualified on a trial for poisoning to give an opinion that the symptoms indicate poisoning, when

his knowledge was not obtained from personal experience or observation. But, whatever the rule may be in this particular, the books all agree that, before one can testify as an expert on that subject, it must first be shown that he is qualified to do so, either by actual experience, or such careful and deliberate study as enables him to form a definite opinion of his own in reference to the matter. Indeed, the definition of an expert, the court says, implies as much. It is one who has made the subject upon which he gives an opinion a matter of particular study, practice, or observation. He must have a particular and special knowledge upon the subject; and his competency, which is a question for the court, must be shown before he is permitted to testify. The mere fact of a witness being a regularly licensed and practicing physician the court does not consider sufficient of itself, as a matter of law, to qualify him to give an opinion as an expert as to the cause of the symptoms of his patients, as for example where poisoning is claimed. This conclusion it largely bases, in this case, on the fact of the act of 1889 regulating the practice of medicine providing that it did not apply to persons then practicing in the state, who, within a certain time, should register in the proper county office, while by the acts of 1891 and 1895 such persons were to be taken and considered as licensed physicians. It can not be assumed, it holds, that such a witness is entitled to testify as expert on the subject referred to. Furthermore, the court holds that a medical witness can not be asked to give his opinion, as a physician, as to what the general symptoms of a case indicated, the question not being so framed as to confine his opinion to facts previously testified to, but being intended to call for his opinion, based upon all the facts within his knowledge, whether stated or not. He must first detail the symptoms; then, if qualified, may be allowed to express an opinion based thereon.

Powers of Secretary of County Board of Health.—The Indiana statute makes the board of commissioners of each county a board of health ex-officio for the county. It then makes it the duty of the board to protect the public health by the removal of causes of disease, when known, and in all cases to take prompt action to arrest the spread of contagious diseases, to abate and remove nuisances dangerous to the public health, and perform such other duties as may from time to time be required by the State Board of Health, pertaining to the health of the people. Annually, the board is required to elect a secretary, who shall be its executive officer and shall serve as health officer for one year. Under this statute, the Appellate Court of Indiana says, in the case of Martin vs. the Board of Commissioners of Montgomery County, the county board of health has authority to protect the public health, and such expenses as are authorized by the board for the public benefit should be borne by the public. But this case presented the question of whether the secretary of the county board of health, irrespective of any action of the board of health, has authority to incur an indebtedness for which the county can be held liable. The court practically holds that he has not. It says that the statute makes the secretary the executive officer of the board, but it does not give him the powers the board itself has. If he has all the powers of the board itself, then the board is a useless body, and the only necessity for its existence is to elect a secretary each year. This was not the intention of the legislature. When the statute says that he shall be the executive officer of the board, it means that he shall carry out such orders and regulations as the board may make. If he has power, for example, to hire a pond of stagnant water drained and thereby abate a nuisance dangerous to the public health, he may do any act without authority from the board. There is no statute giving him authority to bind the county for such services. The statute creates a board of health, says who shall constitute the board, prescribes the duties of the board, and makes the secretary simply the executive officer of the board. If a nuisance is to be abated, that fact must be determined by the board of health, and not by the secretary. Whether, however, in a given case, an emergency might arise requiring immediate action by the secretary, the court says was not presented.

Current Medical Literature.

Titles marked with an asterisk (*) are noted below.

American Medicine (Philadelphia), September 7.

1 Correction of Occipito Posterior Positions Through Seizure of the Anterior Ear by Two Fingers in the Vagina. Robert L. Dickinson.
2 *Disease and Sin. (Concluded.) George M. Gould.
3 *Resections and Exsections. Fernand Henrotin.
4 What Is True Conservatism in the Treatment of Appendicitis? Miles F. Porter.
5 *The Manifestations of Rheumatism in Children. William F. Cheney.
6 An Unusual Type of Smallpox, with Fatal Termination. Louis Leroy.
7 The Future of the Negro from the Standpoint of the Southern Physician. Seale Harris.

Boston Medical and Surgical Journal, September 5.

8 *Under What Circumstances (Excepting Emergencies) Is It Desirable to Operate Upon Gallstones for Radical Cure or for Relief? Maurice H. Richardson.
9 *Obstructive Diseases of the Lower Bowel. Henry O. Marcy.
10 *The Indications for Operation in Malignant Neoplasms of the Stomach. Charles G. Cumston.
11 Remarks on Tuberculosis and Its Treatment. Dr. Baradat.
12 *The Chemical Properties of Leucocytes. Edward T. Williams.

Medical Record (N. Y.), September 7.

13 *The Work of the Sanitary Department of Havana, with Special Reference to the Repression of Yellow Fever. W. C. Gorgas.
14 A Personal Experience in Radiography. Alexander B. Johnson.
15 *Can Nasal Catarrh and Catarrhal Deafness be Cured? Carolus M. Cobb.
16 The Need of Better Provision for the Proper Care of Cases of Delirium Tremens and Cases of Doubtful Mental Disease. Henry C. Baldwin.
17 *A New Continued Fever. Edgar J. Spratling.

Philadelphia Medical Record, September 7.

18 *On Streptothrical Infections. John H. Musser.
19 *Light and Radiance in the Treatment of Disease. George G. Hopkins.

Medical News (N. Y.), September 7.

20 *A Study of the Temperature Laws in Epilepsy Based on One Thousand Observations. William P. Spratling.
21 The Treatment of Puerperal Infection. David J. Loring.
22 Generalized Vaccinia. John H. Huddleston.
23 A Massage Roller for the Application of Heat and Cold, Combined with Electricity. Robert C. Kemp.
24 A Consideration of Hemorrhoids. John Turner, Jr.
25 Autotoxemia. William W. Pennell.

New York Medical Journal, September 7.

26 *Modern Methods in the Management of Typhoid Fever, in Nursing, Feeding, and Bathing, with Special Reference to the Private Patient. Russell Bellamy.
27 Imperative Conceptions. Hugh T. Patrick.
28 Study of the Temperature, Pulse, and Respiration in the Diagnosis and Prognosis of Certain Diseases of the Brain. (Continued.) J. T. Eskridge.
29 *Therapeutics of Whooping Cough. Thomas J. Mays.
30 An Unusual Case of Gastric Ulcer. Frank H. Murdoch.

St. Louis Medical Review, September 7.

31 Hernia and Its Treatment: Reducible, Incarcerated and Strangulated. Herman E. Pearse.

Cincinnati Lancet-Clinic, September 7.

32 The Doctor Harris Case. Brose S. Horne.
33 Trifacial Neuralgia—Treatment. B. Merrell Ricketts.

AMERICAN.

2.—See abstract in THE JOURNAL of July 13, p. 135.

3. **Resections and Exsections.**—Henrotin favors radical operations in diseases of the ovary and tubes. He says he has performed at least 250 operations and can safely say that 40 per cent. may be termed delayed or partial cures or failures. Of this 40 per cent. the heaviest proportion by far comes from such patients as have had salpingotomy or tubal resection performed. The next most complaining class includes those patients in whom ovaries alone were resected, and the best results were obtained in those in whom the tubes were entirely exsected, and the whole or portion of the ovaries removed. The argument in favor of tubal resection that it saves reproductive power is not to be considered very valid, and he says that

when such an operation is performed for every baby born there will be 40 uncured or only partially cured patients. He does not wish to be classed among the ultra-radical operators, however, and the question how much of an operation should be done at each time arises even in these cases.

5.—See abstract in THE JOURNAL, xxxvi, p. 1493.

8. **Gall-Stones.**—The treatment of a case of gall-stone is discussed by Richardson, who favors early operation. As a rule the operation is easy, safe, rapid and effectual and remote dangers are avoided and lessened. If the diagnosis turns out to be wrong other lesions may be discovered, perhaps even more serious. The difficulties of determination between lesions in this locality causing pain is very great and the more appreciated by the surgeon the greater his experience. Late operations for gall-stones are difficult and dangerous. The objections to the operation are, first, the danger which, though slight, is worth considering and should be emphasized, though he does not believe that it equals the dangers that attend the passage of a single stone from the gall-bladder to the duodenum. The diagnosis is frequently wrong, but he does not believe that this necessarily prohibits exploratory operation. For one case of needless or hopeless intervention there may be many permanent cures. Hernia may result though it is not liable to be serious in the upper abdomen. It is, nevertheless, a disadvantage. The possibility of recurrence is considered, but he has never seen or had reason to suspect it after cholecystotomy and drainage. This argument, therefore, seems to have little weight. As regards the possibilities of spontaneous cure he considers the chances so remote and the dangers so great that it may be safely neglected. We have on the one hand slow and painful ulceration lasting for years and on the other, safe, rapid, intelligent and scientific work of a few minutes with absolute demonstration of a permanent cure which is impossible in other cases. The possibility that after offending enough to prove the diagnosis, gall-stones may give no further trouble should be little considered, unless where there are distinct contra-indications to operation; the other possibility that the last decisive attack of biliary colic may have been caused by the last remaining gall-stone is not of sufficient force to prevent exploratory operation. If one gall-stone begins to give trouble there is no telling where the process will end, except that the chances are that it will end in permanent disability or death, if let alone.

9. **Obstruction of the Lower Bowel.**—The various conditions in cases of obstruction are noted by Marcy with the therapeutic indications in each. The most important are those due to malignant growths, which unfortunately, however, come to the surgeon as a rule too late to hope for cure by complete removal. When the case has so advanced as to come within the strict limitation of his subject, that is, obstructive disease of the lower bowel, little can be hoped except palliation by colostomy. In his surgical experience he finds he has steadily enlarged the class of cases considered operable; he is governed much more by the evidences that the disease is absolutely local than by its precise location. Any circumscribed growth limited to the portion of the bowel within reach of the finger in either sex is operable. If there is distinct evidence of glandular infiltration it is doubtful whether operation is advisable, and here relief is experienced and life prolonged by colostomy. He speaks well of the Kraske operation in some of these cases as giving an enlarged field of operation and affording the possibility of removal of many of the pelvic glands. Abdominal section in the Trendelenburg position is also noticed; resection of the lower bowel for cancer by approaching it from above in many instances is a very great advantage in modern technique for a variety of reasons. The lymphatic glands of the pelvis can be examined and removed as by no other route. Resection may be made much more accurately, and in many instances the function of the lower bowel preserved and restored.

10. **Malignant Disease of the Stomach.**—Cumston sums up that the surgical treatment of carcinoma of the stomach is indicated not only when the stenosis is present, but also as a radical cure of cancerous disease. If it has radically cured a few patients only, it has at least given, in more than 33 per cent. of those operated on, a new lease of life of from one to eight years, while the mortality has been reduced to 20, 15 and even 10 per cent. In every case of suspected carcinoma an immediate exploratory laparotomy should be advised and every new growth that can be removed should be taken out no matter what its nature may be. A confirmed diagnosis of cancer of the stomach should not be waited for as exploratory laparotomy is justified in every case where the patient is affected with gastric troubles when: 1. An analysis of the gastric juice shows absence of pepsin, or the presence of lactic acid. 2. When medical treatment carefully conducted does not increase the body weight and keep it there. The indications are those drawn from the general condition of the patient and the presence of visceral metastases demonstrated by palpation or exploratory incision as well as from the immobility and adhesions of the tumor and the propagation of the neoplasms beyond the movable portions of the duodenum or esophagus. The age of the patient, presence of some enlarged glands, size, position and extent of the new growth in no way contraindicate operation.

12. **Leucocytes.**—Williams suggests a change of name for Ewing's classification of leucocytes, using the terms acid, neutral and alkaline instead of basophile, neutrophile and oxyphile. In all three classes the nuclei, like the bodies of the normal single-nucleated leucocytes, take the alkaline dyes. The normal, many-nucleated leucocytes are neutral to dyes as are also the neutral myelocytes, which are found only in disease. The bodies of the so-called eosinophile leucocytes and myelocytes take only the acid dyes. They are, therefore, alkaline. The alkaline leucocytes, he thinks, occur chiefly in disease and any marked increase in their number is sure to be a pathologic symptom. He suggests that the presence or absence of nuclei is a condition on which the taking up of acid dyes depends and that the alkaline leucocytes are the dyeing forms. He therefore includes all alkaline leucocytes under the designation of necrotic cells. This opinion is supported not only by their presence in disease, but by their association with xanthine and spermin, which are the products of decomposition of nuclein.

13. **Yellow Fever in Havana.**—The methods of sanitation adopted in Havana are described by Gorgas. Since the demonstration of the mosquito origin of the disease, a complete change has been made in the system of quarantine. A certain number of rooms selected by the physician and patient's family are quarantined, completely isolated by nets made mosquito proof, and all mosquitoes in adjoining rooms and even in adjoining houses are destroyed as far as possible, and the insecticide methods adopted. The results are very striking. The disease seems to have been almost absent during the present year, at a time when it should be most prevalent. The city is divided into eight districts for the purpose of destroying mosquitoes by the use of oil, mosquito-proof receptacles for water, etc. He says in conclusion, there being a very large non-immune population in the city, and yellow fever having been introduced into the city on a dozen different occasions, they have so far managed to keep it out later than has ever been done before. Even if it should occur later in the season, he feels confident the destruction of mosquitoes is the proper method for fighting the disease and that we shall be eventually successful on these lines.

15. **Nasal Catarrh.**—The importance of finding the source of infection in cases of nasal catarrh is emphasized by Cobb, who reports several cases demonstrating his points. Each case, he thinks, must be carefully studied, and it may be a question of weeks and even months before we can be certain of the cause, but if we bear in mind that chronic discharge in the throat is caused in the same way as chronic discharge in other parts of the body, and study the cases in this light, we should be able to treat it intelligently. His experience has led him to believe that the disease is curable. Some of the cases were cured by the treatment of antral disease, others by

removal of portions of the turbinate and in one case the diseased root of a tooth was the cause of the condition.

17. **New Continued Fever.**—In the spring and early summer of this year Spratling has observed what is to him a new fever in his part of Georgia. It begins with malaise, muscular pain, especially in the neck, slight chilly sensations, temperature rising at once to 102 F. sometimes, pulse from 112 to 120, respiration to 30 or 40; nausea was present, a hacking cough and mental depression; later the pains were more pronounced, and headache severe, with photophobia and dizziness on rising; the temperature was 104 to 106 F., pulse 120 to 140, respiration 40 to 60; the abdomen was sore and tympanitis, there was anorexia, and scanty, offensive and highly-colored urine. The mind was periodically clouded, often actively delirious, according to the temperature, which changed rapidly, sometimes four or five fluctuations in twenty-four hours; the slightest noise, disturbance, or exertion, mental or physical, causing rapid exacerbations. The cases differ from dengue in the very widely varying symptoms. In several cases the temperature reached 106.5 F., and the influence of environment was very marked, which also differed from dengue. There was also no involvement of whole families; the cases were isolated. The symptoms lasted from two to five days, then gave way rapidly, but the fever and scant urine persisted for several days longer, and there were frequently profuse sweats. We have here, he thinks, a close relative, if not actually the same thing as Malta or Mediterranean fever. In about one-half of the 60 cases the disease was mild. The longest course was twenty-three days. The prognosis was good when no organic heart lesion existed. The kidneys were stimulated with alkaline diuretics and depressant medication avoided; strength preserved and quiet maintained. Tests for malaria and typhoid fever failed to give any reactions; and these diseases are rare in that locality.

18.—This article has appeared elsewhere. See THE JOURNAL of August 31, ¶68, p. 603.

19. **Light Treatment.**—Hopkins describes his methods of using light and the *x*-ray. In cancerous growths he prefers soft tubes and has found the static machine worked by an electric motor preferable to the alternating current. For the protection of the parts not to be treated he uses several layers of lead foil, glued to pasteboard or more flexible material, making an opening where the rays are desired to act. The theory on which he advocates the use of the soft *x*-ray tube in the treatment of carcinoma is that the power to produce changes in the tissues must be proportionate to the resistance which the cells of the tissue to be acted on offers to any destroying agent. Theoretically, the longer wave of the soft tube, as compared with the harder tube, has more destroying and disintegrating effect. He reports a case which he thinks was cured by this method. The first effect in all the cases is decrease in the density of the tumor. This change in consistency governs very largely the time of exposure. If the time is too long necrosis would occur, which should be avoided.

20. **Epilepsy.**—The temperature in epilepsy has been carefully studied by Spratling, who notices Bourneville's conclusion that isolated attacks augment the central temperature. His own observations agree in part only with Bourneville, who does not classify the types of seizures studied or make due allowance for certain physiologic conditions. After making due allowance for diurnal variation, he finds that 40 per cent. would be the lowest of such cases showing increased temperature after seizures, and 70 per cent. the highest, making the general grand average of cases showing increased temperature after seizures 55 per cent. The part played by muscular activity in creating heat is noted and its action in these cases wholly irrespective of any influence exerted on the cerebral heat centers. In many petit mal and psychic attacks in which muscular activity plays a small part and in which the temperature is increased after seizures, such increase is due to disturbance either of the cortical heat center or centers, or of centers that observers believe have been located in the corpus striatum and optic thalamus. He finds that subnormal temperatures follow epileptic seizures after grand mal more than after petit mal or psychic seizures, the proportion being 15 per cent. of the former to 10 per cent. of the latter types; and while he agrees in the main with Lemoine in considering such cases as anomalous in having abnormally low temperature in health, he does not consider this explanation quite sufficient. There will usually be found in these cases some chronic disease or general esthenic condition of long standing that lowers the stamina and vitality of the individual. All that has been said by Bourneville, Lemoine and others in reference to the high temperature in status epilepticus is confirmed by his observations. The temperature in serial attacks runs uniformly higher than in isolated attacks, but not so high as in status, serial attacks occupying a middle ground, between the two. As a possible factor in establishing the presence of toxins or other agencies in the body prior to and possibly causing the convulsion, an effort was made to take the temperature in some cases when the aura was of sufficient length, before the attack, but was successful in only one case where the heat began two hours before the fit, when it ran steadily up to 102 F. and the patient passed into convulsion.

26. **Typhoid.**—The details of hospital treatment are given at length by Bellamy with special reference to the nursing, dieting, bathing methods, etc. He has not had much success with the ice tub, but believes that systematic tubbing on modern lines is the most advantageous. The methods used in the Johns Hopkins Hospital are described and illustrated by plates, as is also the author's bathing apparatus. As regards other methods he mentions the use of saline baths, which he thinks are of practical advantage in many cases, also olive oil inunctions following these to relieve the irritation caused by the salt. He believes in the use of turpentine if tympanites exists and sweet spirits of niter and digitalis in small doses, strychnin sulphate, etc. When convalescence occurs he insists on the necessity of care as regards diet, etc.; as much care and consideration should be given the patient as during the stage of pyrexia.

29. **Whooping Cough.**—The treatment suggested here by Mays is the use of counter-irritants over the pneumogastric nerves, which he says is the only method that has ever given him good results. The practical way of applying the remedy is as follows: Trace the pulsating carotid artery from behind the angle of the lower jaw to the clavicle on both sides of the neck. This will be a landmark for finding the pneumogastric nerves which lie in close proximity and slightly behind the carotids. Gentle massage and kneading of this region of the neck, every hour or two, yield beneficial effects in many cases of this disease. The application of a strip of mustard plaster, about two inches wide, from the angle of the lower jaw to the clavicles on each side of the neck, two or three times a day, until the full effects of the mustard are evident, is almost sure to cause amelioration of the spasmodic cough. Equal parts of gum camphor, chloral hydrate, and menthol, applied over this region, are also very useful. Painting the same area with tincture of iodin, twice a day, until irritation of the skin is produced, is a beneficial procedure. Finally, in very stubborn cases the hypodermic injection of silver nitrate over the vagi must be resorted to in accordance with the following plan: Lift the skin over the vagus between the thumb and the forefinger of the left hand, introduce the hypodermic needle just under the elevated skin, and inject five minims of a two-and-a-half-per-cent. solution of cocain hydrochlorid. Detach the syringe from the needle and allow the latter to remain in the puncture. Wash out the syringe with water, draw a two-and-a-half-per-cent. solution of silver nitrate into the syringe, attach the latter to the needle, and throw in from three to six minims of the silver solution. Under this treatment he says the child becomes more comfortable, the paroxysms less frequent and the severity of the cough decreases. The affection assumes a different character even in a day or two.

FOREIGN.

Revue Hebd. de Laryngologie (Bordeaux), July 27.

Acute Inflammatory Edema and Abscess of the Larynx. LUBET-BARBON.—The principal indication is to gain time. The

edema will become stationary in forty-eight to sixty hours and subside after three to four days. Antiphlogistic measures internally and externally, possibly leeches, hot fumigations, wet packs around the neck, a 1 to 1000 carbolized spray and insufflations of morphin are some of the measures recommended. If the abscess points, incise immediately. In 3 cases observed by the writer this intervention revealed pus and relieved the patients. Intubation or tracheotomy is the last resort. Nineteen cases are reported, including several of personal observation. Only one patient was a child. The edema may be due to irritation from a foreign body, to a chill or other cause favoring infection, which is produced by various germs. The dyspnea may be the first symptom and appear suddenly. Inspiration is difficult and whistling. Expiration is protracted and croupy. The patient is unable to cough or expectorate as the dyspnea is increased by the slightest effort of the kind. He can not sleep for fear of suffocation, and the waking coma is due not only to the fatigue from sleeplessness but to the slow anoxhemia, the consequence of the dyspnea. Dysphagia is so pronounced that the patient feels as if a sharp instrument were in his throat at every effort to swallow. There may be fever and chills. Two cases are on record in which the removal of the obstacle by tracheotomy failed to prevent the fatal termination.

August 10.

Aberrant Mastoid Cellulitis. J. TOUBERT.—Osteitis from an otitis of the middle ear developing at a distance, beyond the antrum, is a rare affection. The aberrant abnormal cell in which it occurs is always retro-antral or mastoido-occipital. This cellulitis in Moure's case proved fatal. In Richard's it caused hemicrania, nausea and vomiting. The lymphatic or venous route was evidently the source of contagion, as there was no direct connection between the middle ear and the aberrant cells in the four cases on record. Recovery was remarkably rapid after evacuation. The abundance and the persistence of the suppuration indicate its origin in the bone.

Revue Mensuelle des Maladies l'Enfance (Paris), August.

Treatment of Old Forward Luxation of the Radius. BROCA.—The technique advocated is the resection of the head of the radius if it will not stay under the condyle after reposition on account of the rupture of the ligament in front. After the head is removed, the stumps of the ligament can be brought across the small neck and sutured, thus holding the radius in its normal position. The functional results in a case described were perfectly satisfactory. The patient was a lad of 7 and the luxation had occurred eight months previously.

Heart Disease in Children. MARFAN.—Mitral insufficiency from endocarditis, without other lesions, in children is sometimes curable. When it persists, it causes little if any functional disturbance while childhood lasts. If asystolia, that is, symptoms of insufficient contraction of the left ventricle occur, some other lesion must be present, probably congenital. An idiopathic endocarditis sometimes develops in children. It is more severe before 4 or 5 than after this age, and most frequently affects children with some congenital lesion. Acquired lesions of the aorta are very rare in children. Marfan has observed 3 cases and been able to find only 24 in the literature. They are of a rheumatismal or atheromatous type. The former includes pure aortic insufficiency, with the same manifestations as in the adult, although the functional disorders are less pronounced. This tolerance diminishes with age. Aortic insufficiency associated with aortitis, is a second variety. True stenosis of the orifice of the aorta is exceptional in children unless congenital. This variety, with its double souffle at the base, is more serious than the first. The lesions are diffuse instead of circumscribed. There may not be angina pectoris, but pain occurs frequently in the sternum, without distress or irradiation. The attacks of suffocation sometimes suggest asthma, sometimes dyspnea with pallor and vomiting, but they last only a few seconds. In the third variety, the lesions are associated with some alteration of the mitral orifice, and in the fourth and last, with pericardial adhesion. The latter causes, in children, recurring asystolia with brief intermissions. Only a few instances of atheromatous lesions in children are on record. They usually appear under the form of a chronic aortitis with a systolic souffle at the base, usually erroneously attributed to stenosis. If isolated, it causes little trouble. In one case, neuralgia of the phrenic nerve was the only symptom, but it may lead to an actual aneurysm or induce fatal asystolia. This insufficient contraction of the left ventricle, in children, is usually due to pericardial adhesion, but occasionally to an acquired endocarditis complicating a congenital cardiac lesion. After 6 years of age it is almost invariably due to pericardial adhesion. In children, the heart rhythm is usually preserved. Tricuspid insufficiency is very rare, as is also apoplexy of the lungs, while the hepatic phenomena predominate. The liver remains comparatively enlarged even during the intermissions. In rheumatismal pericardial adhesion, the heart is hypertrophied, while in the tubercular variety it is of normal size or even smaller than normal. Edema, cyanosis and the cardiac liver are common to both. The cardiac liver in these cases tends to cirrhosis, and the exaggeration of the symptoms may simulate a tubercular peritonitis or alcoholic cirrhosis, and perihepatitis may obscure the picture still more. Digitalis must be given at the slightest suspicion of insufficient contraction of the left ventricle. Marfan prefers a maceration of 20 to 40 cg. of the pulverized leaves in 60 to 100 gm. of cold water, strained after twenty-four hours and administered at one dose in the morning before breakfast, for five or six days to a child of 5 or 6. He then substitutes .75 gm. of theobromin for a child under 6 and 1 gm. after this age. This stimulates the renal function. Digitalis again after ten days if necessary. Caffein may advantageously supplement these measures, one subcutaneous injection of 10 to 20 cg. of caffein for two or three days. A purgative should not be given before the digitalis, as it may start a diarrhea hard to control. Sometimes the diuresis is not established until ascites has been relieved by puncture. Absolute rest in bed is essential, and a milk diet, with possibly revulsion over the heart with methyl chlorid, etc. By these measures an impending attack of asystolia may sometimes be averted. To forestall the tendency of the cardiac liver to cirrhosis, Marfan gives calomel every fifteen to twenty days, 5 cg. in five doses at half-hour intervals in the morning.

Archiv f. Kinderheilkunde (Stuttgart), xxxii, 1 and 2.

Radioscopy of the Chest in Children. G. VARIOT.—Radioscopy of the chest in pneumonia in the adult is difficult, but children can be wrapped up warmly and carried to the apparatus in another room without discomfort or danger. The results of radioscopy in genuine croupous pneumonia confirm those obtained by percussion and auscultation and frequently afford information when the latter fail. It is possible thus to differentiate pneumonia from meningitis, especially when the solidification is taking place and the slightest difference in the transparency of the lung is plainly perceptible. It reveals centrally located pneumonic foci which have hitherto baffled all diagnostic measures. It is more difficult of interpretation in case of bilateral bronchopneumonia on account of the lack of the sound lung for comparison. There is merely a slight decrease in the transparency of the parenchyma, most pronounced with confluent foci, especially the pseudo-lobar forms. The edge of the heart shadow is vague as it blends with the opacity of the parenchyma.

Atresia of Larynx After Intubation. G. v. RITTER.—A child of 16 months exhibited suddenly symptoms of laryngeal stenosis, requiring intubation, suffocating as soon as the tube was removed. Tracheotomy was therefore done after a few days; four days later the larynx was found to be completely occluded just above. The child died from intercurrent measles and autopsy confirmed the complete obstruction of the larynx just above the tracheal wound, corroborating O'Dwyer's assertions in regard to the possibility of this occurrence after tracheotomy during inflammation. Since then Ritter has made a practice of continuing the intubation indefinitely if necessary, gradually substituting smaller and shorter tubes until in his five cases he found that the children—all between 15 months and 3 years—were cured without the necessity of fur-

ther intervention. The intubation was continued for twelve to thirty-two days. The tube was coughed out sixteen times in one case.

Iron in Mother's Milk. J. K. FRIEDJUNG.—One of the disadvantages of the artificial feeding of infants is probably the lack of the iron which is always found in the normal milk of healthy women—in a proportion of 3.52 to 7.21 mg. to the liter in twenty-one cases investigated. The women were 19 and 27 years old, the infants 10 days to nearly 10 months. When nurslings do not thrive on apparently normal milk, the proportion of iron is usually found to be subnormal.

Ambulant Lewaschoff Treatment of Purulent Pleuritis. A. A. KISSEL.—An apparently hopeless case of purulent pleurisy in a boy of 2, with high fever, great emaciation and a tubercular affection of the knee, was completely cured by the Lewaschoff method of the systematic substitution of warm saline solution for the pleuritic effusion. About 35 c.c. were removed in four applications of the aspirator, each followed immediately by the injection of the same amount of the salt solution. The fluid, which was a thin pus at first, was only slightly turbid at the last application. The procedure was repeated twice later, at intervals of about two weeks.

Beitraege z. Klin. Chirurgie (Tubingen), xxx, 2.

Intermittent Hydrops of the Knee. A. LINBERGER.—All of the 68 cases of intermittent hydrops of joints which Linberger has succeeded in collecting were in the knee, or knees, except one. Rheumatic antecedents were noted in 25, trauma in 8, gonorrhea in 4, the puerperium and tuberculosis in 2. Only 18 have completely recovered. The best results have been attained with arsenic—3 cures and 2 improvements out of 14; quinin—with 2 cures and 2 improved out of 18, and operation, which resulted in 4 cures of 7, and 3 improved although with recurrence later. Immobilization, ergotin injections in the vicinity, electricity, potassium iodid, a "dry diet" and change of occupation cured one patient each. No constant relation could be discovered between the recurrence of the effusion and menstruation. It is probably the result of inflammation, and consequently requires the same treatment, sparing the knee as much as possible. In the two personal cases observed, the hydrops recurred regularly every thirteenth day, with pain and inability to use the joint, conditions returning to normal in three days. One patient was a young man with a history of gouty attacks. The recurrence of the hydrops was postponed for six months at one time after puncture and disinfection. No benefit was derived from quinin, thyroid medication or Bier's stagnation hyperemia. [An English physician has recently called attention to a painless effusion in the right knee, liable to occur during the menopause or at puberty. It does not require local treatment, he says, as it subsides spontaneously.—ED.]

Centralblatt f. Innere Med. (Leipsic), July 1.

Case of Three Lungs. G. HERXHEIMER.—At the autopsy of a three-weeks infant bifurcation of the trachea was noted, and a third lung was discovered communicating with it by a separate bronchus. All the three lungs showed the lesions of the fatal catarrhal pneumonia. Three other observations have been published of rudimentary lungs, but this is the first with actual functional connection with the trachea.

July 15.

Experimental Tuberculosis of the Suprarenals. B. DE VECCHI.—Clinical conditions were imitated as closely as possible in the experimental research reported. Cultures of the tubercle bacillus were injected through the back into one suprarenal. All the animals exhibited the picture of severe intoxication, but no tubercular processes were found in the organs, merely the alterations in the cells of the nerves, liver, spleen and heart, and destruction of the blood with consequent deposits of pigment in the blood-forming organs, characteristic of severe intoxication. The most severe morbid changes were found in the central nervous system, indicating an elective action of the toxins on the gray matter of the cord. The entire cerebrospinal axis was affected, but the changes were most intense in the dorsal portion of the cord. The findings corroborate the assumption that Addison's disease is the sum of two factors: Insufficiency of the suprarenals and intoxication from the products resulting from the tubercular process developing in or outside of these organs. They also explain why caseous processes induce the classic picture of Addison's disease, while a tumor in the organ causes merely the indications of insufficiency.

Dermatologische Zeitschrift (Berlin), August.

Mechanism of Neurotic Alopecia. A. BAYET.—A young laboring man of a decided neuropathic tendency received a blow in the face. Three weeks later the hair fell out en masse over a large part of the head. Examination of the hairs showed that for 6 mm. from the proximal end each hair was degenerated, much diminished in diameter and with no traces of pigment. The hairs that did not fall out but continued to grow, showed the same shrinking and absence of pigment for a corresponding distance of 6 mm., while the hair was normal above and below the lanugo portion. The trauma must evidently have affected the nourishment of the papillæ for a time corresponding to the growth of 6 mm. of hair, after which conditions returned completely to normal.

Fortschritte a. d. Geb. d. Roentgenstrahlen (Hamburg), iv, 4.

Therapeutic Application of X-Rays. SJÖGREN.—Seventy-eight patients with various cutaneous affections have been treated at the writer's establishment in Stockholm. In 18 out of 27 cases of lupus the results were excellent. In 6 other cases the lupus had been treated in vain by other methods and was promptly and apparently permanently cured by radiotherapy. A complete cure followed its application in the 5 cases of scrofuloderma and 10 of chronic eczema, and also in 4 of intolerable pruritus of anus or vulva. All ulcerations were favorably influenced, fresh granulations rapidly developing while rodent ulcers shrank and finally disappeared. Hypertrichosis may require several repeated applications unless used with exceptional vigor from the start. Psoriasis did not seem to be affected by radiotherapy.

Jahrbuch f. Kinderheilkunde (Berlin), August.

Family Amaurotic Idiocy. FALKENHEIM.—A number of new cases have been published of Sachs' infantile family amaurotic idiocy with more or less paralysis, since his communications, raising the total to 64, of which 38 are known to have terminated fatally while the fate of 23 is unknown; 47 were seen by physicians and 17 diagnosed from others' descriptions. One of the first reported patients is still alive, 8 years old, but the affection is usually fatal before 3. Falkenheim has found 37 cases in 13 families, and notes that 4 of these families were interrelated. There did not seem to be any syphilitic, alcoholic or nervous antecedents in the family history, nor consanguinity, but the parents were Jews in the majority of cases. The development of the affection was not prevented by artificial feeding of the infants nor a wet nurse. No prophylactic measures have been discovered and no treatment has been of any benefit. The only consolation the physician is able to offer the parents is that they may have other children who will be free from the affection, as healthy children have been born before or after those thus afflicted in nearly every case. Falkenheim reports 4 new cases. The largest number—30—were observed in America, with 11 in England, 14 in Germany—generally Polish Jews—and 23 elsewhere on the continent. The symmetrical, congenital grayish-white opacity around the fovea, the weakness or paralysis of all the extremities, and the marasmus are the most striking features of this affection.

Wiener Klin. Wochenschrift, August 22.

Heart Failure from Insignificant Superficial Ulceration. ZUPPINGER.—In the three cases described, a small apparently insignificant ulceration was followed by death in a few days, with symptoms of insufficiency of heart action. The patients were healthy children between 1 and 3 years of age. The autopsy of two showed pronounced myocarditis and acute nephritis, evidently due to some severe intoxication, and from

the absence of all other foci, the infection must have been exclusively localized in the superficial ulceration, a phlegmon on the foot in one case, an ulceration in the inguinal region in another and bilateral abscesses in the glands of the neck in the third. There were no symptoms of sepsis, merely those of cardiac insufficiency, rapidly fatal. The parents were healthy and had other healthy children in the two cases in which an autopsy was possible.

Gaceta Medica de Mexico, August 1.

Epilepsy in Mexico. S. SOSA.—This report was prepared at the request of Dr. Letchworth, president of the Association for the Study of Epilepsy. It states that there are 118 epileptic women and 48 epileptic men in the special wards set apart for them in the insane asylums of the City of Mexico. The treatment is usually bromids alternating with belladonna, a week at a time, with hydrotherapy. Various other methods of treatment have been tried with little result. Three Mexican plants, traditionally beneficial in epilepsy, were given partial trials. One, the *senecio canicida*, is an active poison for dogs, affecting the nervous centers and inducing a syndrome similar to that of epileptic grand mal. Toussaint discovered that this action was restricted to the protuberance and medulla oblongata. Various clinical experiments with it demonstrated that 10 to 20 cg. a day of the pulverized leaves diminished the number of seizures. Sosa administered it to ten women, but he noticed that cerebral congestion was easily produced while they were taking it, and he then abandoned its use. *Ipomea stans* is another plant which has for generations been credited with the power of curing epilepsy. It has never yet been really scientifically tested. The *indigofera anil* was tentatively tried on account of its reputation for curing epilepsy, and Sosa states that its administration has a certain effect in diminishing the epileptic grand mal seizures, although it has never been tried on an effective scale.

The Public Service.

Army Changes.

Movements of Army Medical Officers under orders from the Adjutant-General's Office, Washington, D. C., Aug. 29 to Sept. 4, 1901, inclusive:

R. E. Austin, contract surgeon, leave of absence from the Department of Cuba, extended.

Alfred E. Bradley, captain and asst.-surgeon, U. S. A., ordered before a board in Washington, D. C., for examination for promotion.

Thomas S. Bratton, captain and asst.-surgeon, U. S. A., leave of absence extended.

Frederick A. Dale, lieutenant and asst.-surgeon, U. S. A., leave of absence granted.

Basil H. Dutcher, lieutenant and asst.-surgeon, U. S. A., ordered before a board in Washington, D. C., for examination for promotion.

Harry A. Eberle, contract surgeon, now at Canton, Ohio, is relieved from further duty at Aibonito, P. R., and on the expiration of his present leave of absence will report for duty at Fort Totten, N. Y.

Henry S. Greenleaf, lieutenant and asst.-surgeon, U. S. A., from Alcatraz Island, Cal., to duty at the Presidio of San Francisco, Cal.

Herbert W. Hatch, contract surgeon, former orders relieving him from duty in the Department of Alaska and directing him to proceed to San Francisco, Cal., en route for duty in the Division of the Philippines, revoked.

Franklin M. Kemp, lieutenant and asst.-surgeon, U. S. A., ordered before a board in Washington, D. C., for examination for promotion.

William P. Kendall, major and surgeon, U. S. A., to represent the Medical Department of the Army at the annual meeting of the American Public Health Association, to be held at Buffalo, N. Y., Sept. 16 to 20, 1901.

Edward L. Munson, captain and asst.-surgeon, U. S. A., to represent the Medical Department of the Army at the annual meeting of the American Public Health Association, to be held at Buffalo, N. Y., Sept. 16 to 20, 1901.

Harry O. Perley, major and surgeon, U. S. A., now at San Francisco, Cal., will proceed to Plattsburg Barracks, N. Y., for duty at that post.

Frederick P. Reynolds, captain and asst.-surgeon, U. S. A., leave of absence granted.

Herbert G. Shaw, lieutenant and asst.-surgeon, U. S. A., from the Presidio of San Francisco, Cal., to Alcatraz Island for post duty.

Richard P. Strong, lieutenant and asst.-surgeon, U. S. A., leave of absence extended.

Benjamin L. Ten Eyck, captain and asst.-surgeon, U. S. A., ordered before a board in Washington, D. C., for examination for promotion.

Philip G. Wales, captain and asst.-surgeon, U. S. A., ordered before a board in Washington, D. C., for examination for promotion.

Roy A. Wilson, contract surgeon, from Fort Totten, N. Y., to San Francisco, Cal., en route for assignment in the Division of the Philippines.

Navy Changes.

Changes in the Medical Corps of the Navy, week ended Sept. 7, 1901:

Asst.-Surgeon E. Thompson, detached from the *Solace* and ordered home and to wait orders.

Medical Director E. S. Bogert, retired, detached from the Boston Navy Yard, September 5, and ordered home.

Surgeon I. W. Kite, detached from the *Monterey*, upon reporting of relief, and ordered home and to wait orders.

Surgeon V. C. B. Means, detached from the marine recruiting rendezvous, September 25, and ordered to the *Monterey* as relief of Surgeon I. W. Kite, sailing from San Francisco, Cal., by Army transport about October 1.

Surgeon G. T. Smith, ordered to the *Amphitrite* as relief of Surgeon J. M. Edgar.

Surgeon J. M. Edgar, detached from the *Amphitrite*, upon reporting of relief, and ordered home and to wait orders.

Asst.-Surgeon E. O. Huntington, ordered to the Naval Hospital, New York.

Asst.-Surgeon J. F. Murphy, detached from the Naval Academy, upon reporting of relief, and ordered to the *Indiana*.

Asst.-Surgeon W. M. Garton, detached from the *Indiana* and ordered to the Naval Academy as relief of Asst.-Surgeon J. F. Murphy.

Medical Director G. F. Winslow, ordered to the naval recruiting rendezvous, Boston, Mass., October 1.

Surgeon C. J. Decker, ordered to the marine recruiting rendezvous, San Francisco, Cal., September 25, as relief of surgeon V. C. B. Means.

Asst.-Surgeon P. E. McDonald, detached from the Naval Museum of Hygiene, Washington, D. C., September 9, and ordered to the *Constellation* as relief of Asst.-Surgeon C. A. Crawford.

Asst.-Surgeon C. A. Crawford, detached from the *Constellation* upon reporting of relief, and ordered to the Naval Hospital, Chelsea, Mass., as relief of Asst.-Surgeon R. R. Richardson.

Marine-Hospital Changes.

Official list of the changes of station and duties of commissioned and non-commissioned officers of the U. S. Marine-Hospital Service for the seven days ended Sept. 5, 1901:

P. A. Surgeon J. O. Cobb, granted ten days' extension of leave of absence.

P. A. Surgeon Rupert Blue, granted leave of absence for ten days from Sept. 2, 1901.

P. A. Surgeon J. H. Oakley, granted leave of absence for two months from Sept. 17, 1901.

Asst.-Surgeon H. C. Russell, to proceed to Cleveland, Ohio, and assume temporary command of service during absence of Surgeon W. J. Pettus.

Asst.-Surgeon H. B. Parker, to proceed to Amite City and Abita Springs, La., for special temporary duty.

Asst.-Surgeon M. K. Gwyn, granted leave of absence for one day.

Asst.-Surgeon B. S. Warren, granted leave of absence for fourteen days from Sept. 14, 1901.

A. A. Surgeon P. N. Barnesby, granted leave of absence for one month from Sept. 1, 1901.

A. A. Surgeon R. E. Ebersole, granted leave of absence for seven days from Sept. 3, 1901. Paragraph 181, Regulations, M.-H. S.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, U. S. Marine-Hospital Service, during the week ended Sept. 7, 1901:

SMALLPOX—UNITED STATES.

California: Los Angeles, Aug. 17-24, 1 case; San Francisco, Aug. 18-24, 2 cases.
Kansas: Wichita, Aug. 24-31, 1 case.
Louisiana: New Orleans, Aug. 24-31, 1 case.
Massachusetts: Boston, Aug. 24-31, 6 cases.
Minnesota: Minneapolis, Aug. 17-24, 5 cases.
Nebraska: Omaha, Aug. 24-31, 2 cases; South Omaha, Aug. 25-30, 2 cases.
New Jersey: Newark, Aug. 24-31, 5 cases, 2 deaths.
New York: New York, Aug. 17-31, 37 cases, 12 deaths.
Pennsylvania: Philadelphia, Aug. 24-31, 31 cases, 2 deaths.
Utah: Salt Lake City, Aug. 19-24, 2 cases.
West Virginia: Wheeling, Aug. 18-31, 1 case.

SMALLPOX—FOREIGN.

Austria: Prague, Aug. 10-17, 1 case.
Brazil: Rio de Janeiro, July 28-Aug. 4, 42 deaths.
Colombia: Panama, Aug. 19-26, 10 cases.
France: Paris, Aug. 3-17, 19 deaths.
Great Britain: Dundee, Aug. 10-24, 4 cases; London, Aug. 10-17, 13 cases, 2 deaths.
India: Bombay, July 30-Aug. 6, 2 deaths; Calcutta, July 27-Aug. 3, 5 deaths; Madras, July 27-Aug. 2, 9 deaths.
Italy: Messina, Aug. 10-17, 7 cases, 1 death; Naples, Aug. 10-17, 119 cases, 17 deaths.
Mexico: City of Mexico, Aug. 18-25, 2 cases.
Russia: Moscow, July 27-Aug. 10, 4 cases, 3 deaths; Odessa, Aug. 3-17, 2 cases, 1 death; Warsaw, July 27-Aug. 10, 5 deaths.

YELLOW FEVER.

Brazil: Rio de Janeiro, July 14-23, 7 deaths.
Colombia: Bocas del Toro, Aug. 21, 1 case.
Costa Rica: Port Limon, Aug. 11-18, 8 cases, 4 deaths.
Cuba: Cumanayagua, Aug. 17-24, 1 case; Matanzas, Aug. 31, 2 cases.

CHOLERA.

India: Bombay, July 30-Aug. 6, 8 deaths; Calcutta, July 27-Aug. 3, 17 deaths; Madras, July 26-Aug. 2, 26 deaths.
Japan: Yokohama, July 20-Aug. 3, 2 cases.
Straits Settlements: Singapore, July 6-13, 1 death.

PLAGUE.

Brazil: Rio de Janeiro, July 14-28, 4 deaths.
China: Hongkong, July 13-27, 37 cases, 35 deaths.
India: Bombay, July 30-Aug. 6, 158 deaths; Calcutta, July 27-Aug. 3, 11 deaths.